# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Case No. 22-981-JLH

(Consolidated)

Plaintiff,

**JURY TRIAL DEMANDED** 

 $\mathbf{v}_{\bullet}$ 

**NETGEAR, INC.,** 

Defendant.

PUBLIC VERSION FILED: July 29, 2025

# [PROPOSED] JOINT PRETRIAL ORDER

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Exhibit 14B	NETGEAR's Motion <i>in Limine</i> 2; TrackThings' Opposition; NETGEAR's Reply; and Exhibits Thereto

# List of Objection Abbreviations Used by TrackThings in Exhibits 8, 11, and 12

Code	Rule	Description
FRE 401-403	Fed. R. Evid. 401-403	Lack of relevance and/or prejudicial
FRE 602	Fed. R. Evid. 602	Lack of Foundation
FRE 701	Fed. R. Evid. 701	Opinion testimony by a lay witness
FRE 801-802	Fed. R. Evid. 801-802	Hearsay
FRE 901	Fed. R. Evid. 901	Lacks authenticity
FRE 408	Fed. R. Evid. 408	Settlement discussion
DEM	Fed. R. Evid. 107	Demonstrative / Should Not Be Admitted Into Evidence
I	Fed. R. Evid. 106	Improper/Incomplete designation
FRE 1002	Fed. R. Evid. 1002	Best evidence rule
LIT		Inadmissible expert report, pleading, briefing, motion, deposition transcript, or discovery response
MIL		Subject to motion in limine
U		Untimely (e.g., not produced during discovery)

# List of Objection Abbreviations Used by Defendant in Exhibits 7, 11, and 12

ABBREV.	OBJECTION	
403	Fed. R. Evid. 403 (Prejudice, confusion, waste of time, misleading the jury, undue delay,	
	cumulative evidence)	
408	Fed. R. Evid. 408 (Settlement offers)	
703	Relied upon by expert, but otherwise inadmissible (Fed. R. Evid. 703)	
A	Lacks authentication (Fed. R. Evid. 901)	
AF	Assumes facts not in evidence	
BATES	Incorrect or Missing Bates Range	
BE	Best Evidence Rule (Fed. R. Evid. 1002)	
C/D	Cumulative or Duplicative	
DAU	Subject to ruling on <i>Daubert</i> motions	
DEM	Demonstrative / Should Not Be Admitted Into Evidence	
F	Lacks Foundation (Fed. R. Evid. 602)	
Н	Hearsay (Fed. R. Evid. 802)	
I	Incomplete (Fed. R. Evid. 106)	
ID	Improper Designation (Fed. R. Civ. P. 32)	
LC	Calls for legal conclusion	
M	Misleading/Mischaracterizing	
MD	More than one document or improper collection of documents	
MIL	Subject to a motion in limine	
NT	Text in foreign language not translated into English / Improper translation	

ABBREV.	OBJECTION
О	Improper opinion (Fed. R. Evid. 701 & 702)
P	Privilege
Q	Poor Quality, Illegible, or Unclear
R	Relevance (Fed. R. Evid. 401 & 402)
S	Summaries (Fed. R. Evid. 1006)
U	Untimely (e.g., not produced during discovery)
X	Exhibit Not Provided / Not Sufficiently or Improperly Described / Wrong Document
DD	Seeking to admit deposition testimony beyond affirmative designations, objections, and counter designations

This matter having come before the Court for a pretrial conference held pursuant to Fed. R. Civ. P. ("Rule") 16. The plaintiff is TrackThings LLC ("Plaintiff" or "TrackThings") and the defendant is NETGEAR Inc. ("NETGEAR") (collectively, the "Parties"). Pursuant to Local Rule 16.3, the Parties hereby submit for the Court's approval this Final Pretrial Order governing the jury trial, scheduled for September 8, 2025.

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#### I. NATURE OF THE CASE AND PLEADINGS<sup>1</sup>

- 1. This is a patent infringement action wherein Plaintiff TrackThings LLC ("TrackThings") alleges that NETGEAR, Inc. ("NETGEAR") infringes the asserted claims of U.S. Patent No. 9,332,442 ("the '442 Patent" or "the Patent-in-Suit").
- 2. The technology at issue involves mesh Wi-Fi products for homes or small businesses. The Accused Products include various Orbi dual-band, tri-band, or quad-band products, and various Nighthawk dual-band and tri-band products, and include routers, satellites, and other compatible devices which are interoperable with one another to create mesh Wi-Fi home networks.
- 3. The final pretrial conference is scheduled for **August 15**, **2025**. A 4-day jury trial is scheduled to begin on **September 8**, **2025**, with jury selection to occur on **September 5**, **2025**.

#### A. The Parties

- 4. TrackThings is a New Jersey limited liability company with its principal place of business at 62 Burlington Road, Murray Hill, New Jersey 07974. TrackThings is the owner of the Patent-in-Suit, including the right to sue for past infringement.
- 5. NETGEAR is a Delaware corporation with its principal place of business at 350 East Plumeria Drive, San Jose, California 95134.

# B. Pleadings

6. The operative pleadings in this case:

<sup>&</sup>lt;sup>1</sup> Where the parties have alternative proposals, TrackThings' proposed language is in **BLUE** and NETGEAR's is in **GREEN**.

- TrackThings' Complaint (D.I. 1 in action 23-395)<sup>2</sup>, filed April 6, 2023.
- NETGEAR's Answer (D.I. 64), filed August 17, 2022.

# C. The Asserted Claims

7. TrackThings alleges that NETGEAR indirectly infringes claims 1, 5, 7, 9, 15, 17, 23 and 25 of the '442 Patent.

#### D. Claim Construction Order

8. The Court held a claim construction hearing on June 21, 2023. *See* Hr'g Tr., D.I. 143. The Court entered a Claim Construction Order on August 2, 2023 (D.I. 146, 156) construing the below terms from the '442 Patent as follows:.

Term	Court's Construction
"computational unit" ('442 patent, claims 7, 8, 15, 16, 23, and 24)	35 U.S.C. § 112 ¶ 6 does not apply.
"partitioning the plurality of streams of bits each partitioned into a plurality of portions"	"partitioning each of the input stream of bits from the Internet, the stream of bits from the first cell phone, and the stream of bits from the second cell phone into two or more portions"

# E. Pending Motions

- 9. The currently pending motions are:
  - NETGEAR's original *Daubert* motion to exclude the testimony of Stephen Holzen (D.I. 245 and 343);

<sup>&</sup>lt;sup>2</sup> TrackThings first brought this suit in *TrackThings LLC v. Netgear*, Inc. SDNY-1-21-cv-05440. It was later transferred to this Court with the caption C.A. No. 22-981-RGA-JLH. TrackThings then filed a second action in this Court with the caption C.A. No.: 23-395-RGA. These two actions are consolidated and "D.I." refers to the consolidated docket: *TrackThings LLC v. Netgear Inc.*, 22-981-JLH unless otherwise noted.

- NETGEAR's second *Daubert* motion to exclude the testimony of Stephen Holzen
   (D.I. 373 and 387);
- NETGEAR's motion for summary judgment on non-infringement of the '442 patent (D.I. 240 and 343); and
- NETGEAR's motion for summary judgment for invalidity of the '442 patent (D.I.
   241 and 343).
- 10. The parties additionally have pending motions *in limine*, described in Section XII below and filed concurrently.

# II. JURISDICTION AND VENUE

- 11. This Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338 as this action arises under U.S. patent law.
  - 12. The Parties do not dispute personal jurisdiction or venue for purposes of this action.

# III. JOINT STATEMENT OF UNCONTESTED FACTS (L.R. 16.3(c)(3))

- 13. The Parties' statement of facts that are not disputed or have been agreed to or stipulated by the Parties is attached as **Exhibit 1**.
- 14. These facts are not disputed or have been agreed to or stipulated to by the Parties. These facts should become part of the evidentiary record in this action. Any party, with prior notice to all other parties, may read any or all of the uncontested facts to the jury or Court and will be charged for the time used to do so.

# IV. CONTESTED FACTS (L.R. 16.3(c)(4), (10))

- 15. TrackThings' statement of contested facts is attached as **Exhibit 2**.
- 16. NETGEAR's statement of contested facts is attached **Exhibit 3**.

- 17. If any statement in a party's statement of issues of fact that remain to be litigated should properly be considered an issue of law, then such statement shall be so considered as an issue of law.
- 18. The Parties reserve the right to modify or supplement their respective statements of contested facts that remain to be litigated to the extent necessary to reflect agreements between the Parties or the Court's rulings on any motions or subsequent orders of the Court.

# V. ISSUES OF LAW

- 19. TrackThings' statement of governing law for issues that remain to be litigated is attached as **Exhibit 4**.
- 20. NETGEAR's statement of governing law for issues that remain to be litigated is attached as **Exhibit 5**.
- 21. If any statement in a party's statement of issues of law should properly be considered an issue of fact, then such statement shall be so considered as an issue of fact.
- 22. The Parties reserve the right to modify or supplement their respective statements of issues of law to the extent necessary to reflect agreements between the Parties or the Court's rulings on any motions or subsequent orders of the Court.

# **VI. EXHIBITS** (L.R. 16.3(6))

# A. Documentary and Physical Exhibits

23. The list of exhibits that the Parties may jointly offer at the jury trial which, subject to continued meet and conferring in advance of and during trial, may ultimately be offered jointly by TrackThings and NETGEAR, is attached as **Exhibit 6**. The Parties' joint trial exhibits will be identified by JTX numbers starting with JTX0001.

- 24. TrackThings' list of exhibits that it may offer at the jury trial, and NETGEAR's objections to TrackThings' exhibits, is attached as **Exhibit 7**. TrackThings' trial exhibits will be identified with PTX numbers, starting with PTX0001.
- 25. NETGEAR's list of exhibits that it may offer at the jury trial, and TrackThings' objections to NETGEAR's exhibits, is attached as **Exhibit 8**. NETGEAR's trial exhibits will be identified with DTX numbers, starting with DTX0001.
- 26. TrackThings and NETGEAR have provided the key to their objection codes for objections to exhibits included in **Exhibits 7 and 8**, respectively.
- 27. Except for exhibits to be used for purposes of impeachment or for cross examination, the items listed in **Exhibits 6, 7,** and **8** comprise the exhibits that may be introduced at trial. All documents offered during direct examination, must be included on a trial exhibit list. Documents used during cross examination may be admitted into evidence only if included on the trial exhibit list, absent good cause shown. The parties must submit electronic copies of all trial exhibits to the Court no later than **12 p.m. Eastern Time on the Friday before trial begins** (**September 5, 2025**).
- 28. TrackThings and NETGEAR each reserve the right to offer exhibits set forth on the other's exhibit list, even if not set forth on their own exhibit list, except that the offering party reserves the right to raise objections to the use of the exhibit by the opposing party. All objections to such exhibits are preserved. A party shall not remove a document once it has been added to the party's exhibit list without agreement from the other party, unless it provides the other party the opportunity to add the document to its exhibit list.
- 29. While the parties have attempted in good faith to provide complete exhibit lists, the parties agree that supplementation of exhibit lists shall be permitted until **Friday**, **August 22**, **2025**

at 5:00 p.m., and thereafter only by agreement of the parties, or with the Court's approval for good cause shown.

30. [Exhibits that are offered into evidence at trial and have no objections shall be received in evidence by operation of this Order, without any need for further foundation testimony, provided they are used with a witness whether appearing live or by deposition.]<sup>3</sup> Should a party inadvertently fail to formally move an exhibit into evidence at the close of the witness's testimony, the parties agree that such exhibits may be moved into evidence, subject to objection, promptly thereafter. Exhibits may not be published, displayed or otherwise shown to the jury until after they have been admitted into evidence, except for purposes of impeachment or as part of illustrative aids used during opening statements, subject to any objections raised to the illustrative aids. Once admitted, counsel may publish exhibits to the jury without requesting to do so. Any exhibit, once admitted, may be used equally by each party, except that nothing herein shall be construed as a stipulation or admission that the document is entitled to any weight in deciding the merits of this case. Admissions by a party, to the extent otherwise admissible under the Federal Rules of Evidence, from any interrogatory responses, other discovery responses, or answers to pleadings may also be read into the record at trial, provided the party seeking to read such

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<sup>&</sup>lt;sup>3</sup> **TrackThings' Position:** The proposed language tracks this Court's precedent from *Sight Sciences* ¶ 31. NETGEAR does not point to a relevant difference in facts or issues that requires the Court to stray from its precedent, and its proposal to require foundation evidence for otherwise unobjected-to exhibits would significantly extend trial without cause. NETGEAR's citation to F.R.E. 602 and 901 is inapposite given that this sentence only applies to exhibits which "have no objections."

**NETGEAR's Position:** The contested language was a joint proposal in *Sight Sciences* to which both parties agreed. *See Sight Sciences*, Dkt. 420,  $\P$  31. The parties to the present case were not parties to the *Sight Sciences* case, and the present case involves different facts and issues. NETGEAR in this case does not agree to the proposed language, and in particular does not agree to waive the requirement that documents be used with a witness who can provide proper foundational support for the documents. *See, e.g.*, F.R.E. 602, 901.

interrogatory responses, discovery responses, or answers to pleadings provides notice of the particular portions of such it intends to read into the record by 6:30 pm one day prior. Any objections will be made by 8:00 pm that evening and the parties shall meet and confer at 9:00 pm. If any objections are still outstanding, the parties will raise them to the Court prior to reading such documents into the record in the manner set forth in Section VIII.

- 31. Any documents [or] deposition transcripts, or other items not specifically identified herein or offered into evidence, may still be used at trial for purposes of impeachment, if otherwise competent for such purposes, but may not be admitted into evidence.<sup>4</sup>
- 32. The parties stipulate to the authenticity of the documents listed in the attached exhibit lists unless such objections are specifically and expressly preserved therein. The parties further agree that they will not dispute the authenticity of any document that was produced by the parties during discovery, which on its face appears to have been authored or received by an employee, officer, or agent of the producing party in the ordinary course of business, and that such documents shall be deemed *prima facie* authentic, subject to the right of the party against whom such a document is offered to adduce evidence to the contrary or to require the offering party to provide authenticating evidence if the opposing party has a reasonable basis to believe that the document is not authentic. For the avoidance of doubt, unless an objection based on authenticity

<sup>&</sup>lt;sup>4</sup> **TrackThings' Position:** TrackThings' proposed language tracks this Court's precedent in *Sight Sciences* ¶ 33. "Other items" would include videos and physical exhibits. Given the unknowns of trial, TrackThings, and this Court's precedent, does not seek to unnecessarily bind parties to only documents or deposition transcripts. NETGEAR does not point to a relevant difference in facts or issues that requires the Court to stray from its precedent.

**NETGEAR's Position:** The contested language was a joint proposal in *Sight Sciences* to which both parties agreed. *See Sight Sciences*, Dkt. 420, ¶ 33. The parties to the present case were not parties to the *Sight Sciences* case, and the present case involves different facts and issues. NETGEAR's proposed language here is consistent with paragraph 27, above. NETGEAR does not know what is encompassed by TrackThings' "or other items" and objects to its inclusion in this case.

is specifically and expressly preserved in the attached exhibit lists, no party will object on the basis of authenticity to documents authored and maintained in the ordinary course of business and produced by either party.

- 33. The parties reserve the right to object to the introduction into evidence of the documents and files referenced in the preceding paragraph (in whole or in part) on all other grounds specifically and expressly preserved in the attached exhibit lists, including the admissibility of these documents for reasons other than challenging their authenticity.
- 34. The parties agree that any description or date for a document reflected on an exhibit list is provided for convenience only and shall not be used as an admission or otherwise as evidence regarding the content or date of the listed document or any other listed documents.
- 35. Legible photocopies of documents may be offered and received in evidence in lieu of originals thereof. Electronic versions of document exhibits in their native format, such as spreadsheets or presentations, may be offered into evidence in lieu of paper or PDF versions. The parties will timely exchange replacement versions and/or native versions of exhibits prior to use in trial.
- 36. In order to reduce the number of duplicate exhibits, where a deposition excerpt references a document by exhibit number and that identical document was also marked with a different trial exhibit number, a party may substitute one exhibit for the other, provided the party provides notice of such substitution by 6:30 pm the day prior to its use. In addition, the parties shall promptly meet and confer regarding replacing any poor print or digital quality copies of exhibits with substantively identical improved or higher quality or color copies.
- 37. None of the foregoing stipulations abrogates the requirement that the party offering an exhibit into evidence must satisfy any other rules governing the admissibility of evidence set

forth in the Federal Rules of Evidence, the Federal Rules of Civil Procedures, this Court's Local Rules, the Court's practices, or any other applicable rule or regulation. The parties shall meet and confer in good faith to resolve objections to trial exhibits prior to their introduction at trial.

38. The parties shall meet and confer on the agreed-upon pretrial schedule regarding their respective objections in an effort to resolve all objections and issues prior to presenting them to the Court.

#### **B.** Illustrative Aids

- 39. The parties may use illustrative aids, which do not need to be identified on their respective lists of trial exhibits. Each illustrative aid shall identify by exhibit number and/or Bates number all trial exhibits that form the basis of the illustrative aid. Illustrative aids shall be filed with the Court at the end of trial and included in the record for appeal. TrackThings' illustrative aids will be identified with PDX numbers, starting with PDX0001. NETGEAR's illustrative aids will be identified with DDX numbers, starting with DDX0001.
- 40. For videos or animations included in an illustrative aid, the party seeking to use the illustrative aid will provide it to the other side in an appropriate electronic format to view the video or animation. For irregularly sized physical illustrative aids, the party seeking to use a physical illustrative aid will serve a color representation as a PDF 8.5" x 11" copy of the physical illustrative aid. Each party will exchange full color PDF files of illustrative aids by e-mail in accordance with the schedules set out below and make the physical illustrative aids available for inspection at an agreed-upon location at noon on the Saturday before trial.
- 41. <u>Illustrative Aids for Opening Statements</u>: The parties will exchange illustrative aids and a list of exhibits to be used in opening statements by **5:00 p.m. one (1) day** before opening statements. The parties will provide any objections to such illustrative aids by **6:30 p.m.** one (1)

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day before opening statements. The parties shall meet and confer to resolve any objections for opening statements at **9:00 p.m**. the day before opening statements.

- 42. <u>Illustrative Aids for Direct Examinations</u>: A party will provide illustrative aids to be used in connection with direct examination of a witness by **6:30 p.m.** one (1) day before their intended use, and objections will be provided no later than **8:00 p.m.** one (1) day before their intended use. The parties shall meet and confer to resolve any objections to the illustrative aids for direct examination at **9:00 p.m.** the day before their intended use.
- Illustrative Aids Created During Testimony or for Cross-Examination: The provisions in this and the three preceding paragraphs do not apply to illustrative aids created during testimony at trial or to illustrative aids to be used for cross examination. Such illustrative aids need not be provided to the other side in advance of their use. In addition, highlighting, ballooning, arrowing, call-outs, excerpting, etc., of exhibits or parts of exhibits or testimony used with a witness are not required to be provided to the other side in advance of their use. For the avoidance of doubt, any addition, highlighting, ballooning, arrowing, call-outs, excerpting, etc. of exhibits used in opening statements must be disclosed to the other party.
- 44. <u>Illustrative Aids for Closing Statements</u>: The parties will exchange illustrative aids to be used in closing statements, including any illustrative aids Plaintiff intends to use in rebuttal, by 10:00 p.m. the day before closing statements. However, the parties do not need to exchange any non-argumentative slides that solely display and cite to an admitted exhibit or trial testimony, nor do the parties need to exchange any illustrative aids that were used in any prior examinations or opening statements. Illustrative aids for closing statements are not subject to the dispute resolution procedures outlined in Section VIII, *infra*. The parties will provide any objections to such illustrative aids by 10:45 p.m. the day before closing statements. The parties

shall meet and confer to resolve any objections for closing statements at 11:15 p.m. the day before closing statements. If there are any outstanding objections after the parties meet and confer, both sides will provide their positions promptly at the end of the meet-and-confer. By 1:30 a.m., Delaware counsel, on behalf of the parties, shall notify the Court by email (jlh civil@ded.uscourts.gov) of any unresolved objections. The parties shall attach to the email a joint pleading identifying the disputes and digital copies of all relevant illustrative aids, exhibits, or other evidence with the disputed passages highlighted. The parties shall state their position on each dispute in one to two sentences. The parties shall provide the Court with two (2) courtesy copies of the submission.

# C. Trial Exhibits

- 45. Each party will provide by e-mail to opposing counsel a list of all exhibits (by exhibit number) a party intends to use in direct examination of witnesses, along with the name of the witness with which exhibits are intended to be used, by 6:30 p.m. one (1) day before they will be used at trial.<sup>5</sup>
- 46. The party receiving identification of exhibits intended for use in direct examination of witnesses shall inform the party identifying the exhibits of any objections by 8:00 p.m. one (1) day before their intended use.
- 47. The parties shall meet and confer by 9:00 p.m. one (1) day before the exhibits will be used at trial to resolve any objections.
- 48. Any unresolved objections shall be brought to the Court's attention, in the manner set forth in Section VIII, for resolution no later than the start of the trial day on which the exhibit is intended to be used.

<sup>&</sup>lt;sup>5</sup> **TrackThings' Position:** The proposed language follows this Court's precedent in *Sight Sciences* ¶ 47.

- 49. Prior to the start of direct examination of a particular witness, the party conducting the direct examination shall provide the other party with two (2) copies of binders containing all exhibits and illustrative aids that they intend to use with that witness on direct examination and shall provide all required copies to the Court. The parties agree that this provision does not require advance disclosure of exhibits, documents, or transcripts to be used to impeach or on cross-examination of any witness. However, prior to the start of the cross-examination of any witness, the parties agree to provide the other with two (2) copies of witness binders that contain all of the exhibits expected to be used on cross-examination of that witness on that day and will provide all required copies to the Court.
- 50. On or before the first day of trial, counsel will deliver to the Courtroom Deputy a completed Form AO 187 Exhibit and Witness List for each party. Plaintiff shall provide a completed Form AO 187 Exhibit and Witness List for all joint exhibits.
- 51. At the conclusion of trial, the parties will jointly provide the Court with a binder and electronic set of the admitted exhibits. The parties will also jointly provide two binders of the admitted exhibits for the jury's deliberations.

#### VII. WITNESSES

### A. Witness Lists

52. The parties have prepared lists of witnesses expected to be called at trial, either live or by deposition. TrackThings' list of witnesses that it may call at trial, together with NETGEAR's objections, is attached as **Exhibit 9**. NETGEAR's list of witnesses that it may call at trial, together with Trackthings' objections, is attached as **Exhibit 10**.6

<sup>&</sup>lt;sup>6</sup> **TrackThings' Position:** TrackThings objects to any testimony by Anna Lam (or any other NETGEAR witness) as to NETGEAR's subjective beliefs as to infringement. NETGEAR declined to provide discovery into its subjective beliefs as to infringement of the Asserted

- 53. The listing of a witness on a party's pre-trial witness list does not require that party to call that witness to testify, and does not mean that the listing party has the power to compel the live testimony of that witness.
- 54. The parties reserve the right to recall expert witnesses in their respective rebuttal cases to rebut testimony or evidence offered after the witnesses' initial testimony.
- 55. The parties' witness lists represent the parties' good-faith understanding and expectation about which witnesses are expected to be called live in-person, or by deposition, at trial. To the extent that a witness's circumstances change, or a witness otherwise becomes unavailable for trial, each party reserves the right to call that witness by deposition, provided the deposition designations for that witness have been previously disclosed, and to the extent permitted under the Federal Rules of Civil Procedure and the Federal Rules of Evidence and subject to resolution of objections by the other party.
- 56. Each party will, with its best good faith understanding, identify by e-mail to the opposing party the witnesses it intends to call, including rebuttal witnesses, the non-argumentative transition statement to introduce the witness, the order in which witnesses will be called, and whether those witnesses will be called live or by deposition, by 6:30 p.m. three (3) days before such witnesses will be called to testify. The parties reserve the right to revise, in good faith, their witness identifications, including witness order, as long as any witness who testifies has been disclosed per the schedule above.

Patents during discovery, *e.g.*, responding to TrackThings' Interrogatory No. 4, which sought "opinions. . . regarding any Patent-in-Suit, . . . whether it relates to infringement or non-infringement . . . or any other affirmative defense or counterclaim" by stating that "NETGEAR does not presently intend to rely on an opinion of counsel in this matter and is otherwise unaware of any non-privileged analyses of the Patents-in-Suit." NETGEAR is thus precluded from offering such testimony at this juncture.

- 57. The other party will identify any objections to such witnesses *via* e-mail by 8:00 p.m. the following day, and the parties shall meet and confer to resolve any objections by 9:00 p.m. that same evening. If good-faith efforts to resolve any objections fail, the party objecting may bring its objections to the Court's attention prior to the witness being called to the witness stand in the manner set forth in Section VIII. If later events cause the need to remove a witness from a party's witness list, the parties agree to notify the other side as soon as possible.
- 58. The parties agree that each non-expert fact witness will be called to testify only once, except in the case of rebuttal testimony. Thus, if both parties intend to elicit affirmative testimony from a witness, that witness will be called during the case-in-chief of the party with whom that witness is affiliated, and cross-examination shall be permitted to exceed the scope of direct to elicit adverse testimony from the witness. If a party intends to call an adverse witness to testify live, the party intending to call the adverse witness must notify the opposing party by no later than fourteen (14) days before the witness is intended to testify in Court.
- 59. During adjournments in the trial including breaks during the trial and overnight, the offering party may discuss with a witness his or her testimony on direct examination until the witness is passed for cross-examination and cross-examination has commenced but is prohibited from discussing with the witness his or her testimony during or after cross-examination.

# **B.** Testimony by Deposition

60. TrackThings' list of deposition designations, Defendant's objections and counter-designations, and TrackThings' objections to the counter-designations and counter-counter-designations are attached hereto as **Exhibit 11**.

- 61. Defendant's list of deposition designations, TrackThings' objections and counter-designations, and Defendant's objections to the counter-designations and counter-counter designations are attached hereto as **Exhibit 12**.<sup>7</sup>
- 62. If applicable, a party's designation of a page and line from a particular transcript shall be automatically deemed to include any errata indicated for that page and line in the attached errata sheets.
- 63. The parties agree that objections and statements by counsel will not be introduced except where necessary to understand the answer to the question. The parties agree that, subject to resolution of any objections, exhibit(s) referenced in a designated deposition excerpt may be presented and shown to the jury at the same time that the excerpt is played or read.
- 64. Where both parties have designated testimony for a particular witness, either affirmatively or via counter-designation, all designated deposition testimony for that witness will be read or played by video in chronological order. Regardless of whether deposition testimony is read or played by video, the time for each party's designated portions will be charged to the designating party. The parties shall provide the Court with a proposed allocation of time to be assessed to each side for any deposition testimony read or played by video.
- 65. When a witness is called to testify by deposition at trial, the party calling the witness shall provide the Court with two copies of the transcript of the designations and counter designations that will be read or played.

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<sup>&</sup>lt;sup>7</sup> **TrackThings' Position:** NETGEAR has not provided any affirmative deposition designations at this time and has reserved the right to amend or supplement its affirmative deposition designations. TrackThings' objects to further affirmative deposition designations, absent good cause, on the basis of undue delay.

- 66. The parties agree that the party offering a witness may make a brief, non-argumentative transition statement, agreed to by the parties, before any witness is called.
- 67. For any witnesses whose testimony the parties intend to present by deposition, the parties shall identify a list of deposition designations to be played or read to the jury by 6:30 p.m. two (2) days before the designations are to be played or read to the jury. Any objections and counter-designations shall be provided no later than 3:00 p.m. the day before the designations are to be played or read to the jury. Any objections to counter-designations shall be provided no later than 6:30 p.m. the day the counter-designations are provided. The party introducing the deposition testimony shall be responsible for editing the deposition video to include the testimony and any counter-designation testimony, and remove any attorney objections, and provide a final version of the deposition testimony excerpts (testimony clip report and full video) to the other party by 8:00 p.m. the day before it is to be shown to the jury. If the party intends to read the deposition testimony into the record instead of playing the video, the party shall state that in writing by 7:00 p.m. the day before the testimony is to be introduced. The parties shall meet and confer at 9:00 p.m. the day before the deposition testimony is to be shown to the jury in an attempt to resolve any objections to the deposition. The parties will continue in good faith to meet and confer regarding the proposed deposition testimony and if objections remain unresolved, the parties will cooperate in seeking to have the Court resolve any disputes prior to presenting the proposed testimony.
- 68. Any deposition testimony not specifically identified on a party's deposition designation list may still be used at trial for the purposes of impeachment of witnesses testifying live, if otherwise competent for that purpose. When a party uses deposition testimony for impeachment, the party may elect to either play the deposition testimony by video or to read the deposition testimony live, unless the Court orders otherwise. All designated deposition testimony

may be played by video or may be read live in court, subject to the procedures set forth in this Pretrial Order. The parties agree that any counter-designations identified pursuant to the process in this section above, to which the other party did not object or to which the Court overruled the objection, may be included in the reading or video playing of deposition designations at the election of the counter-designating party. A party may also use the counter-designations of the other party. To the extent that the trial is subject to specific time limitations, the time available for each party's trial presentation shall count against the length of its selected designated and counter-designated testimony read or played. The designations and counter-designations must be presented in the order they appear in the transcript. All colloquy between counsel and objections will be eliminated as much as practicable when deposition testimony is presented at trial.

- 69. The procedures concerning deposition testimony discussed above do not apply to any previously admitted witness deposition testimony the parties intend to present during the closing statements.
- 70. The above procedures regarding deposition designations do not apply to portions of deposition transcripts and/or video of a witness used for impeachment or cross-examination of that witness. Any deposition testimony of a witness testifying live may be used at trial for the purpose of impeachment of that witness, regardless of whether a party specifically identified that testimony on its list of deposition designations, if the testimony is otherwise competent for such purpose.

# VIII. DISPUTE RESOLUTION PROCEDURES FOR OBJECTIONS TO EXHIBITS, DEMONSTRATIVES, DEPOSITION DESIGNATIONS, AND WITNESSES

71. If, after meeting and conferring, the parties are unable to resolve their objections to illustrative aids, witnesses, deposition designations, or other evidence, the objecting party shall provide its position(s) promptly after the conclusion of the meet and confer and in no event later

than 10:00 p.m. The responding party shall provide its responsive position by 11:00 p.m. By 12:00 a.m. on the day which the illustrative aids, witnesses, deposition designations, or other evidence will be presented, Delaware counsel, on behalf of the parties, shall notify the Court by email (jlh\_civil@ded.uscourts.gov) of any objections to illustrative aids, witnesses, deposition designations, or other evidence to be presented that trial day. The parties shall attach to the email digital copies of all relevant illustrative aids, exhibits, deposition designations, or other evidence with the disputed passages highlighted. The parties shall state their position on each dispute in one to two sentences.

72. Parties' objections to illustrative aids, exhibits, witnesses, and deposition designations shall be addressed from 8:30 a.m. to 9:00 a.m., after 4:30 p.m., or during the morning, lunch, or afternoon breaks, or at such other time as the Court determines.

#### IX. BRIEF STATEMENT OF INTENDED PROOFS

#### A. TrackThings' Statement of Intended Proof

- 73. TrackThings intends to prove by a preponderance of the evidence that NETGEAR indirectly infringes the Asserted Claims of the '442 Patent by actively inducing infringement of these claims by knowingly encouraging others, including but not limited to end users of the Accused Products, to directly infringe these claims with knowledge that such conduct constitutes infringement.
- 74. TrackThings intends to prove that NETGEAR's infringement of the Asserted Claims was willful since at least the service of the original complaint on June 23, 2021.
- 75. TrackThings intends to prove that damages in the form of a reasonable royalty should be awarded for NETGEAR's past infringement, and that treble damages should be awarded for NETGEAR's willful infringement of the '442 Patent.

- 76. TrackThings intends to prove Defendant should pay ongoing royalties for future infringement.
- 77. TrackThings intends to prove that it should be awarded costs and reasonable attorneys' fees under at least 35 U.S.C. § 285, as well as pre- and post-judgment interest.

#### B. NETGEAR's Statement of Intended Proof

- 78. TrackThings has not established and cannot prove at trial that NETGEAR induced and/or continues to induce third parties to directly infringe the asserted claims of the '442 Patent.
- 79. TrackThings has not established and cannot prove at trial that NETGEAR willfully infringed the '442 Patent.
- 80. TrackThings has not established and cannot prove at trial that it is entitled to damages, pre-judgment interest, post-judgment interest, an ongoing royalty, costs, attorneys' fees, treble damages, or any other form of monetary relief.
- 81. NETGEAR intends to prove that the asserted claims of the '442 Patent are invalid under §§ 101, 103, and/or 112.
- 82. NETGEAR intends to prove that the asserted claims of the '442 Patent are not entitled to the priority date TrackThings claims.
- 83. TrackThings has not established and cannot prove at trial that it is entitled to any other form of relief on any of its claims or defenses.

# X. DESIRED AMENDMENTS TO THE PLEADINGS

84. TrackThings and NETGEAR presently have no amendment to the pleadings to conform the pleadings to the claims and defenses presented at trial.

# XI. CERTIFICATION OF SETTLEMENT DISCUSSIONS

85. The parties certify that they have engaged in a good-faith effort to resolve this case by settlement but have been unable to reach a resolution.

#### XII. MOTIONS IN LIMINE

- 86. The parties stipulate to the following joint motions *in limine*:
  - The parties shall be precluded from introducing evidence, testimony, or argument referring to any other person or entity in disparaging ways, such as a "patent troll," "pirate," "bounty hunter," "bandit," "playing the lawsuit lottery," "shell company," "shakedown artist," or any such similar terms. Use of the term "non-practicing entity" is permitted.
  - No testimony or argument to disparage or bolster the U.S. Patent Office, its examiners, or its processes. The parties agree that any factual information about the USPTO's operations must be consistent with the USPTO's operations from the Federal Circuit Judicial Center's video entitled "The Patent Process: An Overview for Jurors," or the jury instructions in this case. This MIL does not preclude factual evidence regarding the prosecution of the asserted patent or its parent patent.
  - No testimony or argument related to the fact that testimony of any expert was excluded by another forum.
  - No testimony referencing either party's total revenues, overall financial size, wealth, or employee/executive compensation. The foregoing shall not preclude (1) testimony regarding revenues actually or allegedly attributable to the patents-in-suit (or lack thereof), (2) either party's damages experts from discussing any of the Georgia-Pacific factors applicable to the hypothetical negotiation, or (3) either party from eliciting testimony related to bias, such as a witness's monetary stake in the litigation (or lack thereof).

- The parties shall be precluded from introducing evidence, testimony, or argument regarding funding of the litigation or regarding any comment on attorney-fee compensation including amounts or structure.
- The parties shall be precluded from introducing testimony or argument related to political, religious, racial, ethnic, gender, health, or sexual orientation issues.
- The parties shall be precluded from introducing testimony or argument using pejorative language such as "dishonest," "evil," "greedy," "stealing," "trespassing," or the like.
- The parties shall be precluded from introducing testimony or argument regarding the number of lawyers (at trial or on the case at any time), size of law firms, or the like.
- Neither party shall present evidence, testimony, or argument regarding the
   *Markman* briefing or hearing, and which party proposed which terms. This
   does not preclude informing the jury of which terms were construed and what
   those constructions are.
- 87. TrackThings' disputed motions *in limine* and NETGEAR's responses thereto, are attached as **Exhibit 13**.
- 88. NETGEAR's disputed motions *in limine* and TrackThings' responses thereto, are attached as **Exhibit 14.**

#### XIII. OTHER MATTERS

#### A. Length of Trial

- 89. This case is currently scheduled for a four-day jury trial beginning at **9:00 a.m.** on **September 8, 2025**, with the subsequent trial days beginning at 9:00 a.m. and with the jury excused each day at 4:30 p.m. Jury selection will be on **September 5, 2025** beginning at 9:00 a.m.
- 90. The trial will be timed. Unless otherwise ordered, time will be charged to a party for its opening statement, closing argument, direct and redirect examination of witnesses it calls, and cross-examination of witnesses called by the opposing party. Time dedicated to arguing objections to trial or demonstrative exhibits will be charged against the parties at the Court's discretion.
- 91. Each side shall be allotted 10.5 hours for opening statements, closing arguments, and all direct, cross and rebuttal examinations. Each side must reserve at least 1 hour of its time for its closing argument, inclusive of any rebuttal by plaintiff. Closing argument shall proceed as follows: TrackThings' closing argument, followed by NETGEAR's closing argument, and concluding with TrackThings' rebuttal argument.
- 92. The Courtroom Deputy will keep a running total of trial time used by counsel. If any party uses all of its allocated trial time, the Court will terminate that party's trial presentation, except for good cause shown.

# B. Voir Dire, Jury Instructions, and Verdict Form

93. The parties are separately submitting to the Court joint proposed voir dire, preliminary and final jury instructions, and a verdict form contemporaneously herewith.

# C. Jurors and Jury Procedures

94. Jury selection shall be conducted by a magistrate judge on September 5, 2025. There shall be eight (8) jurors. The Court will conduct jury selection through the "struck juror" method, beginning with the Court reading voir dire to the jury panel in the courtroom, continuing

by meeting with jurors individually in chambers or at sidebar and there addressing any challenges to strike for cause or excuse for undue hardship until a venire of fourteen (14) jurors is selected. The parties will then have three peremptory strikes each which will be used alternating Plaintiff then Defendant, until the final jury of eight (8) jurors is selected. The parties need not strike jurors in numerical order. If a party elects not to exercise a peremptory strike when it is that party's turn to do so, the party may not thereafter exercise any peremptory strikes.

- 95. Plaintiff will provide the Court forty (40) copies of voir dire and forty (40) generic pens for the jury on the date a jury is to be selected (September 5, 2025).
- 96. On the first day of trial, each member of the jury will be provided a binder (prepared by the parties) containing the Asserted Patents, a chart listing the Court's claim constructions, any agreed-upon glossary of terms, and a notepad/generic pen for notes. The parties will provide witness pages for the jurors to insert in the notebooks at the start of each day when witnesses will be called. The witness page will be an otherwise blank (or lined) page with the name and agreed-upon photograph of the witness. The parties will also provide the Court two copies of notebooks given to the jurors.
- 97. The parties agree that the jurors shall be permitted to write notes by hand on their notepads during the trial, and that jurors be permitted to bring their provided binders and notepads into the deliberation room. The parties propose that the jurors be instructed not to share the binders and notepads with each other. The parties further propose that the jurors' binders and notepads be destroyed without review after the jury's discharge.

# **D.** Objections to Expert Testimony

98. The parties request that the Court rule at trial on any objections to expert testimony as outside the scope of prior expert disclosures, taking time from the parties' trial presentation to

argue and decide such objections. The time taken from trial presentation shall be charged to the party that loses the objection.

# E. Set-Up of Electronic and Computer Equipment

99. The parties request that the Court grant them access to the Courtroom the business day before jury selection begins, to allow them to set up electronic and computer devices to be used during the trial.

# F. Handling of Confidential Information at Trial

- 100. The parties anticipate that the trial will be open to the public and not sealed unless a party specifically requests sealing for a portion of the trial. A party that intends to seek the sealing of the courtroom based on the presentation of its own or a third party's Highly Confidential or Confidential information shall inform the opposing party by no later than 8:30 p.m. the night before the anticipated sealing. If the other party objects to the sealing and the parties cannot reach an agreement after good faith efforts to confer, the parties shall promptly raise the issue with the Court at the earliest opportunity on the day of the intended sealing. If the parties agree to the sealing of the courtroom, the parties shall inform the Court of such sealing request at the earliest opportunity on the day of the intended sealing. If a party makes such a request, subject to the Court's approval, and for good cause shown, the courtroom shall be cleared of those individuals not qualified under the Protective Order entered in this case.
- 101. Notwithstanding the foregoing, the parties shall comply with the operative Protective Order (D.I. 82) and Supplemental Protective Order Between Non-Party Qualcomm Incorporated, Plaintiff and Defendant (D.I. 166) in this case.
- 102. Transcripts of any sealed testimony, and exhibits entered while the courtroom is sealed, shall remain under seal until thirty (30) days after the conclusion of the trial. Within two weeks of the last day of trial, the parties may designate, by page and line designations, the portions

of the transcript they seek to have filed under seal and the exhibits they seek to have placed under seal, subject to the Court's approval. Counsel for the parties shall be responsible for supplying the necessary envelopes and labels for any materials placed under seal. Within two weeks of the last day of trial, the parties shall also make any corrections to the trial transcript.

## 1. Sequestration of Witnesses

103. Pursuant to Fed. R. Evid. 615, fact witnesses will be excluded from the courtroom during trial (after opening statements) so that they cannot hear the other witnesses' testimony. Excluded witnesses will be prohibited from learning about, obtaining, or being provided with trial testimony. For the avoidance of doubt, other than experts, no fact witness other than each party's respective corporate representative and in-house counsel representative shall be allowed to be present at trial before they testify, including prior to any of their rebuttal testimony. In accordance with provision (2) of Rule 615, this exclusion rule will not apply to the officer or employee designated by each party as its representative, nor to the in-house counsel representative. Each party must notify the opposing party of the identity of this corporate representative and/or in-house counsel representative 6:30 p.m. three (3) days before trial. Expert witnesses will not be excluded for either fact or expert testimony.

### 2. Judgment as a Matter of Law

104. If the jury is present at the time a party moves for judgment as a matter of law ("JMOL") pursuant to Fed. R. Civ. P. 50, the moving party shall state only that it moves for judgment as a matter of law pursuant to Rule 50. The moving party shall argue its motion orally out of the presence of the jurors at the earliest opportunity allowed by the Court. The Court will determine, based on the motions, whether to entertain further argument or to require written submissions.

# 3. Other Stipulations

- 105. The parties agree that written responses to interrogatories and requests for admission may be used at trial consistent with the Federal Rules of Civil Procedure and Federal Rule of Evidence even if such responses have not been verified by the responding party.
- 106. The parties stipulate that the Federal Judicial Center's video entitled "The Patent Process: An Overview for Jurors" will be played as part of the Court's preliminary jury instructions after the jury has been seated. *See* https://www.fjc.gov/publications/patent-process-overview-jurors. The parties will provide the seated jurors with copies of the sample patent referenced in the Federal Judicial Center's patent video. Time to play the video will not be charged to any party.
- 107. On or before September 4, 2025, the parties must file a letter attaching a list of witness names and a glossary of technical terms for the court reporter.
- 108. Trial counsel are to be present and ready to proceed no later than 8:30 a.m. ET every trial day. Issues that need to be addressed outside the presence of the jury will be taken up at 8:30 a.m. ET, at the lunch break, at the end of the day, or at such other time that the Court determines.
- 109. All notices, disclosures, and exchanges required by this pretrial order must be sent to the full outside counsel trial team of the respective parties.
- 110. The parties agree they will not refer to or quote from orders of the Court (other than the Court's list of claim constructions) during trial without first approaching the Court for leave.

#### 4. Post-Trial Status Report and Motions

111. Pursuant to the Scheduling Order, within seven (7) days after the jury returns a verdict in any portion of the trial, the parties shall jointly submit a form of order to enter judgment on the verdict, and at the same time, will submit a joint status report indicating how the case should proceed and listing any post-trial motions each party intends to file. The parties will coordinate with the Court to propose a post-trial briefing schedule.

# 5. Order to Control Course of Action

- 112. This Order shall control the subsequent course of the action, unless modified by the Court to prevent manifest injustice.
- 113. The parties reserve the right to seek leave to supplement or amend this Final Pretrial Order based on subsequent events or by agreement.

**IT IS HEREBY ORDERED** that this Final Pretrial Order shall control the subsequent course of this action, unless modified by the court to prevent manifest justice.

Dated:	
	United States District Judge

#### TRACKTHINGS LLC

# /s/ Alexandra M. Joyce

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### NETGEAR, INC.

/s/ James L. Higgins

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# **EXHIBIT 1**

JOINT STATEMENT OF UNCONTESTED FACTS

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Case No. 22-981-JLH

(Consolidated)

Plaintiff,

JURY TRIAL DEMANDED

v.

**NETGEAR, INC.,** 

Defendant.

# **EXHIBIT 1: JOINT STATEMENT OF UNCONTESTED FACTS**

Pursuant to Local Rule 16.3(c)(3) of the Local Rules of Civil Procedure of the United States

District Court for the District of Delaware and the schedule set forth in the governing Scheduling

Order (D.I. 347), Plaintiff TrackThings LLC and Defendant NETGEAR, Inc., respectfully submit
the following joint statement of the facts that are admitted and require no proof.

- 1. U.S. Patent No. 9,332,442 (the "'442 patent" or "patent-in-suit") was filed on December 2, 2013, issued by the United States Patent and Trademark Office on May 3, 2016, lists Thaddeus Gabara as the named inventor, and is assigned to TrackThings LLC.
- 2. TrackThings LLC ("TrackThings") is a New Jersey limited liability company with its principal place of business at 62 Burlington Road, Murray Hill, New Jersey 07974. TrackThings is the owner of the Patent-in-Suit, including the right to sue for past infringement.
- 3. NETGEAR, Inc. ("NETGEAR") is a Delaware corporation with its principal place of business at 350 East Plumeria Drive, San Jose, California 95134.
- 4. The following are prior art references used as part of NETGEAR's obviousness combinations under 35 U.S.C. § 103:
  - U.S. Patent No. 6,751,455 to Anthony Acampora ("Acampora I") was filed on September 15, 2000 and is prior art to the '442 patent.
  - U.S. Patent No. 7,404,074 to David K. Murotake ("Murotake") was filed on July 14, 2003 and is prior art to the '442 patent.
  - U.S. Patent No. 7,184,466 to Brian K. Seemann, et al. ("Seemann") was filed on September 12, 2002 and is prior art to the '442 patent.

# **EXHIBIT 2**

# TRACKTHINGS' STATEMENT OF CONTESTED FACTS

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

**JURY TRIAL DEMANDED** 

# **EXHIBIT 2: TRACKTHINGS' STATEMENT OF CONTESTED FACTS**

### I. INTRODUCTION

- 1. Pursuant to Local Rule 16.3(c)(4) of the Local Rules of Civil Procedure of the United States District Court for the District of Delaware and the schedule set forth in the governing Scheduling Order (D.I. 347), Plaintiff TrackThings LLC ("TrackThings") respectfully submits the following statement of contested facts that remain to be litigated in the action against Defendant NETGEAR, Inc., ("NETGEAR").
- 2. This statement of contested facts is based on the parties' pleadings, documentary and testimony evidence, and on TrackThings' current understanding of the parties' claims and defenses and the Court's rulings to date. TrackThings reserves the right to revise, amend, supplement, or modify its statement of contested facts based upon any pretrial rulings by the Court and/or to address any additional issues, arguments, evidence, or other developments in the case, including edits to the draft pretrial order, any meet and confers or other negotiations between the parties, pending and anticipated motions, and similar developments.

  TrackThings further reserves the right to supplement this statement to rebut or otherwise address the contested facts identified by NETGEAR.
- 3. Should the Court determine that any issue identified in this statement is more properly considered an issue of law, it shall be so considered and TrackThings incorporates it by reference into its statement of issues of law that remain to be litigated, which is submitted as Exhibit 4 hereto. TrackThings contends that the issues of fact (or mixed questions of fact and law) that remain to be litigated at trial and decided by the jury are as follows.

# II. CONTESTED ISSUES OF FACT ON ISSUES WHERE TRACKTHINGS BEARS THE ULTIMATE BURDEN OF PROOF

### A. Induced Infringement

4. Whether TrackThings has proven, by a preponderance of the evidence, that NETGEAR has purposefully caused, urged, encouraged, instructed, and/or aided and continue to cause, urge, instruct, and/or aid third parties to directly infringe claims 1, 5, 7, 9, 15, 17, 23, and 25 of the '442 Patent by using the accused products in this country.

## **B.** Willfulness

5. Whether TrackThings has proven, by a preponderance of the evidence, that Defendant's infringement of the asserted claims was willful.

## C. Damages and Other Relief

- 6. Whether TrackThings is owed damages in the form of a reasonable royalty for NETGEAR's infringement of the '442 Patent, and if so, the number of infringing sales and per-unit royalty should be awarded for NETGEAR's infringement.
- 7. The amount of enhanced damages to be awarded under 35 U.S.C. § 284 for NETGEAR's willful infringement of the Asserted Patents.
- 8. The amount of attorneys' fees and costs TrackThings is entitled to collect under 35 U.S.C. § 285.
- 9. The amount of pre-judgment and post-trial interest and costs TrackThings is entitled to collect.
- 10. Whether NETGEAR should be ordered to pay ongoing royalties for post-judgment infringement.
- 11. Whether TrackThings is entitled to any other relief as this Court deems just and proper.

# III. CONTESTED ISSUES OF FACT ON ISSUES WHERE DEFENDANT BEARS THE ULTIMATE BURDEN OF PROOF

## A. Invalidity

12. Whether NETGEAR has proven, by clear and convincing evidence, the factual elements of obviousness and/or lack of adequate written description under 35 U.S.C. §§ 103 and 112, respectively, for any of the asserted claims of the '442 patent.

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

JURY TRIAL DEMANDED

**EXHIBIT 3: NETGEAR'S STATEMENT OF CONTESTED FACTS** 

## I. INTRODUCTION

- 1. Pursuant to Local Rule 16.3(c)(4) of the Local Rules of Civil Procedure of the United States District Court for the District of Delaware and the schedule set forth in the governing Scheduling Order (D.I. 347), Defendant NETGEAR, Inc. ("NETGEAR") respectfully submits the following statement of contested facts that remain to be litigated in the action brought by Plaintiff TrackThings, LLC ("TrackThings") for the alleged infringement of claims 1, 5, 7, 9, 15, 17, 23, and 25 (the "asserted claims") of U.S. Patent No. 9,332,442 (the "442 patent").
- 2. This statement of contested facts is based on the parties' pleadings, documentary and testimony evidence, and on NETGEAR's current understanding of the parties' claims and defenses and the Court's rulings to date. NETGEAR reserves the right to revise, amend, supplement, or modify its statement of contested facts based upon any pretrial rulings by the Court and/or to address any additional issues, arguments, evidence, or other developments in the case, including edits to the draft pretrial order, any meet and confers or other negotiations between the parties, pending and anticipated motions, and similar developments. NETGEAR further reserves the right to supplement this statement to rebut or otherwise address the contested facts identified by TrackThings.
- 3. Should the Court determine that any issue identified in this statement is more properly considered an issue of law, it shall be so considered and NETGEAR incorporates it by reference into its statement of issues of law that remain to be litigated, which is submitted as Exhibit 5 hereto. NETGEAR contends that the issues of fact (or mixed questions of fact and law) that remain to be litigated at trial and decided by the jury are as follows.

# II. CONTESTED ISSUES OF FACT ON ISSUES WHERE TRACKTHINGS BEARS THE ULTIMATE BURDEN OF PROOF

## A. Priority Date

4. Whether TrackThings has proven, by clear and convincing evidence, that the '442 patent is entitled to a priority date that is earlier than the effective filing date of March 1, 2006.

# **B.** Direct Infringement

5. Whether TrackThings has proven, by a preponderance of the evidence, that NETGEAR's customers directly infringe the asserted claims of the '442 patent by using the accused Orbi and Nighthawk mesh products in this country.

# C. Induced Infringement

6. Whether TrackThings has proven, by a preponderance of the evidence, that NETGEAR induced/continues to induce third parties to directly infringe the asserted claims of the '442 patent by using the accused products in this country.

## D. Willfulness

7. Whether TrackThings has proven, by a preponderance of the evidence, that NETGEAR willfully infringed the asserted claims of the '442 patent.

## E. Damages

- 8. Whether TrackThings has proven, by a preponderance of the evidence, reasonable royalty damages and the amount of any such damages, including the per-unit royalty rate and number of infringing sales, that would compensate TrackThings for infringement of any asserted claims of the '442 patent found infringed and not invalid.
- 9. Whether TrackThings has proven, by a preponderance of the evidence, that it is entitled to any ongoing royalty.

# F. Post-Trial Remedies

10. Whether TrackThings has proven that it is entitled to an award of prejudgment and post-judgment interest, and the amount of such interest.

# III. CONTESTED ISSUES OF FACT ON ISSUES WHERE NETGEAR BEARS THE ULTIMATE BURDEN OF PROOF

# G. Invalidity

11. Whether NETGEAR has proven, by clear and convincing evidence, the factual elements of obviousness and/or lack of adequate written description under 35 U.S.C. §§ 103 and 112, respectively, for any of the asserted claims of the '442 patent.

# H. Eligible Subject Matter

12. Whether NETGEAR has proven, by clear and convincing evidence, that from a perspective of one of ordinary skill in the art as of the priority date of the '442 patent, a relay arranged so that information received from a first software radio can be transferred to a second software radio within the same relay was well-understood, routine, or conventional technology.

# **EXHIBIT 4**

# TRACKTHINGS' STATEMENT OF CONTESTED ISSUES OF LAW

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Case No. 22-981-JLH (Consolidated)

Plaintiff,

JURY TRIAL DEMANDED

v.

**NETGEAR, INC.,** 

Defendant.

EXHIBIT 4: TRACKTHINGS' STATEMENT OF CONTESTED ISSUES OF LAW

### I. INTRODUCTION

- 1. Pursuant to Local Rule 16.3(c)(5) of the Local Rules of Civil Procedure of the United States District Court for the District of Delaware and the schedule set forth in the governing Scheduling Order (D.I. 347), Plaintiff TrackThings LLC. ("TrackThings") respectfully submits the following statement of issues of law that remain to be litigated in the action against NETGEAR, Inc. ("NETGEAR").
- 2. The following statements are not exhaustive. TrackThings reserves the right to modify or amend this Exhibit to the extent necessary to reflect any future rulings by the Court, to supplement or amend this Exhibit to fairly respond to any new issues that NETGEAR may raise, or to address any additional discovery produced by NETGEAR. To the extent TrackThings' statement of contested facts that remain to be litigated, which is submitted as Exhibit 2 hereto, contains issues of law, those issues are incorporated herein by reference. Moreover, if any issue of law identified below should properly be considered an issue of fact, then such statement should be considered to be part of TrackThings' statement of contested facts that remain to be litigated. TrackThings further identifies and reserves the right to rely on any issue of law identified in NETGEAR's corresponding submission, including without limitation as to the Doctrine of Equivalents.
- 3. Further, TrackThings' identification of the issues of law that remain to be litigated on issues where NETGEAR bears the burden of proof is based on its understanding of the arguments that Defendant has put forth to date. To the extent NETGEAR attempts to introduce different or additional legal arguments to meet their burden of proof, TrackThings reserves its rights to contest those legal arguments, and to present any and all rebuttal evidence and argument in response to those arguments, and will not be bound by this summary of remaining legal issues.

4. Currently, there is one patent in suit, U.S. Patent No. 9,332,442 (the "'442 Patent"). The claims at issue are 1, 5, 7, 9, 15, 17, 23, and 25 (the "Asserted Claims").

### II. SUMMARY JUDGEMENT AND PENDING MOTIONS

- 4. The statement of issues of law herein are without waiver to TrackThings' motions, including:
  - TrackThings' motions in limine and other pretrial filings.
- 5. TrackThings incorporates by reference all cited authorities in its briefing, including the opposition briefs to NETGEAR's motions:
  - NETGEAR's Motion For Summary Judgment of Non-Infringement (D.I. 240), filed October 28, 2024; TrackThings LLC's Opposition To NETGEAR's Motion For Summary Judgement of Non-Infringement (D.I. 269), filed November 13, 2024; NETGEAR's Reply in Support of Its Motion for Summary Judgment of Non-Infringement (D.I. 305), filed November 27, 2024.
  - NETGEAR's Motion For Summary Judgment of Invalidity (D.I. 241), filed October 28, 2024; TrackThings LLC's Answering Brief In Opposition NETGEAR's Motion For Summary Judgement of Invalidity (D.I. 266), filed November 13, 2024; NETGEAR's Reply Brief in Support of Its Motion for Summary Judgment of Invalidity (D.I. 306), filed November 27, 2024.

- NETGEAR's Motion To Exclude Testimony of Plaintiff TrackThings

  LLC's Damages Expert Stephen A. Holzen (D.I. 242), filed October 28,

  2024; TrackThings LLC's Answering Brief In Opposition To

  NETGEAR's Motion To Exclude Testimony of Plaintiff TrackThings

  LLC's Damages Expert Stephen A. Holzen (D.I. 265), filed November

  13, 2024; NETGEAR's Reply Brief in Support of Its Motion to Exclude

  Testimony of Plaintiff's Damages Expert Stephen A. Holzen (D.I. 375),

  filed November 27, 2024.
- TrackThings LLC's Partial Motion For Summary Judgment As To NETGEAR's Affirmative Defenses (D.I. 249), filed October 28, 2024; Joint Stipulation Mooting Plaintiff TrackThings LLC's Partial Motion for Summary Judgement as to Certain of Defendant NETGEAR Inc.'s Affirmative Defenses (D.I. 249) (D.I. 273).
- TrackThings LLC's Partial Motion For Summary Judgment As To Validity of The '893 Patent (D.I. 254), filed October 28, 2024; N NETGEAR's Opposition To TrackThings LLC's Partial Motion For Summary Judgment As To Validity of The '893 Patent (D.I. 261), filed November 13, 2024; TrackThings LLC's Reply Brief in Support of Its Motion for Summary Judgement as to the Validity of the '893 Patent (D.I. 302), filed November 27, 2024.

## III. INFRINGEMENT

### A. Issues of Law

6. Whether TrackThings has proven by a preponderance of the evidence that NETGEAR (1) indirectly infringes the '442 Patent by inducing infringement of the asserted claims, literally and/or under the doctrine of equivalents and (2) willfully infringes the '442 Patent.

# B. Legal Standards

- 7. TrackThings has the burden of proving infringement by a preponderance of the evidence. *Creative Compounds LLC v. Starmark Lab'ys*, 651 F.3d 1303, 1314 (Fed. Cir. 2011).
- 8. "A patentee may prove infringement by any method of analysis that is probative of the fact of infringement, [] and circumstantial evidence may be sufficient." *Martek BioSciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1372 (Fed. Cir. 2009) (internal citation and quotation marks omitted); *Liquid Dynamics Corp. v. Vaughan Co.*, 449 F.3d 1209, 1219 (Fed. Cir. 2006).
- 9. "Infringement, literal or by equivalence, is determined by comparing an accused product not with a preferred embodiment described in the specification, or with a commercialized embodiment of the patentee, but with the properly and previously construed claims in suit." *SRI Int'l v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1121 (Fed. Cir. 1985). "[I]nfringement is to be determined by comparing the asserted claim to the accused device, not by comparing the accused device to the figures of the asserted patent." *Catalina Lighting, Inc. v. Lamps Plus, Inc.*, 295 F.3d 1277, 1286 (Fed. Cir. 2002).

- 10. "Once a district court has construed the relevant claim terms, and unless altered by the district court, then that legal determination governs for purposes of trial. No party may contradict the court's construction to a jury." *Exergen Corp. v. Wal-Mart Stores, Inc.*, 575 F.3d 1312, 1321 (Fed. Cir. 2009). "[E]xpert testimony that is inconsistent with the Court's claim construction is unreliable and unhelpful to the finder of fact." *Integra Lifesciences Corp. v. HyperBranch Med. Tech. Inc.*, C.A. No. 15-819-LPS-CJB, 2018 WL 1785033, at \*5 (D. Del. Apr. 4, 2018); *EMC Corp. v. Pure Storage, Inc.*, 154 F. Supp. 3d 81, 109 (D. Del. 2016); *Intuitive Surgical, Inc. v. Auris Health, Inc.*, 549 F. Supp. 3d 362, 369-70 (D. Del. 2021).
- 11. For instance, "the law does not permit [the Defendant] to import limitations from the specification into the claims through expert testimony." *Kraft Foods Grp. Brands LLC v. TC Heartland, LLC,* 232 F. Supp. 3d 632, 635 (D. Del. 2017). It is improper to read limitations from an embodiment in the specification "even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited." *GE Lighting Sols. LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) (citation omitted); *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014).

### 1. Indirect Induced Infringement

- 12. Under 35 U.S.C. § 271(b), "[w]hoever actively induces infringement of a patent shall be liable as an infringer."
- 13. A patentee "has the burden of showing that the alleged infringer's actions induced infringing acts and that he knew or should have known his actions would induce actual infringements." *DSU Med. Corp. v. JMS Co.*, 471 F.3d 1293, 1304 (Fed. Cir. 2006) (quoting *Manville Sales Corp. v. Paramount Sys., Inc.*, 917 F.2d 544, 554

- (Fed. Cir. 1990)). The patentee must prove that the accused infringer "knew of the patent" and had a "specific intent . . . to induce infringement." *Id.* at 1305.
- 14. A court can rely on circumstantial evidence to find specific intent to induce infringement. *AstraZeneca LP v. Apotex, Inc.*, 633 F.3d 1042, 1060 (Fed. Cir. 2010) (citing *Water Techs. Corp. v. Calco, Ltd.*, 850 F.2d 660, 668 (Fed. Cir. 1988)); *DSU Med.*, 471 F.3d at 1306. "While proof of intent is necessary, direct evidence is not required; rather, circumstantial evidence may suffice." *GlaxoSmithKline LLC v. Teva Pharms. USA, Inc.*, 7 F.4th 1320, 1327 (Fed. Cir. 2021) (internal citation omitted). *See, e.g., Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 1272, 229 U.S.P.Q. 805 (Fed. Cir. 1986) (holding that "circumstantial evidence of extensive [] sales" and "dissemination of an instruction sheet" can support a finding of direct infringement by the customer).
- 15. "Inducement can be found where there is '[e]vidence of active steps taken to encourage direct infringement,' which can in turn be found in 'advertising an infringing use or instructing how to engage in an infringing use." *Takeda Pharm. U.S.A., Inc. v. W..l,-Ward Pharm. Corp.*, 785 F.3d 625, 630–31 (Fed. Cir. 2015) (alteration in original) (quoting *Metro-Goldwyn-Mayer Studios Inc. v. Grokster, Ltd.*, 545 U.S. 913, 936 (2005)).

### 2. Willful Infringement

- 16. There is "no precise rule or formula" for showing willful infringement. Halo Elecs., Inc. v. Pulse Elecs., Inc., 579 U.S. 93, 103 (2016).
- 17. The plaintiff has the burden of proving willful infringement, a question of fact for the jury, by a preponderance of evidence. *WBIP*, *LLC v. Kohler Co.*, 829 F.3d 1317, 1339-41 (Fed. Cir. 2016); *Halo*, 579 U.S. at 107.

- 18. Direct or circumstantial evidence can establish willful infringement. See, e.g., Georgetown Rail Equip. Co. v. Holland L.P., 867 F.3d 1229, 1244 (Fed. Cir. 2017); Tristrata Tech., Inc. v. ICN Pharm., Inc., 313 F. Supp. 2d 405, 411-12 (D. Del. 2004).
- 19. A defendant is liable for willful infringement if the defendant knew or should have known of the patent and nevertheless engaged in infringing conduct without concern for the repercussions. *Halo*, 579 U.S. at 100-08. "[P]roof that [an accused infringer] acted despite a risk of infringement that was 'either known or so obvious that it should have been known to the accused infringer" is sufficient to establish willful infringement. *WesternGeco L.L.C. v. ION Geophysical Corp.*, 837 F.3d 1358, 1362-64 (Fed. Cir. 2016) (quoting *Halo*, 579 U.S. at 100-01), *rev'd on other grounds*, 138 S. Ct. 2129 (2018).
- 20. Actual knowledge of the plaintiff's patent is not required to find that a defendant willfully infringed the patent at issue. If the defendant was willfully blind as to their infringement of the patent at issue, then the defendant willfully infringed, *i.e.*, if the defendant (1) had knowledge that their accused products were likely infringing a valid patent, and (2) then intentionally avoided ascertaining whether the accused products infringed such a patent. *Ansell Healthcare Prods. LLC v. Reckitt Benckiser LLC*, No. 15–cv–915–RGA, 2018 WL 620968, at \*6–8 (D. Del. Jan 30, 2018); *Motiva Patents, LLC v. Sony Corp.*, No. 9:18-CV-00180-JRG-KFG, 2019 WL 4737051, at \*13–14 (E.D. Tex. Sept. 27, 2019); *see also, Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 579 U.S. 93 (2016).
- 21. The court must also evaluate the defendant's state of mind at the time of infringement to determine willful infringement. *Halo*, 579 U.S. at 105; *Apple Inc. v.*

Samsung Elecs. Co., 258 F. Supp. 3d 1013, 1024 (N.D. Cal. 2017).

22. Willful infringement can also be based on post-suit conduct. *Mentor Graphics Corp. v. EVE-USA, Inc.*, 851 F.3d 1275, 1295 (Fed. Cir. 2017); *Zimmer Surgical, Inc. v. Stryker Corp.*, C.A. No. 16-679-RGA-MPT, 2017 WL 3736750, at \*2 (D. Del. Aug. 30, 2017); *Apple*, 258 F. Supp. 3d at 1027; *DermaFocus LLC v. Ulthera, Inc.*, 201 F. Supp. 3d 465, 473 (D. Del. 2016).

## IV. PATENT VALIDITY

### A. Issues of Law

23. Whether NETGEAR has proven by clear and convincing evidence that the Asserted Claims are invalid as obvious under 35 U.S.C. § 101, § 103, lacking written description under § 112.

# B. Legal Standards

# 1. Presumption of Validity

TrackThings' Asserted Claims are presumed to be valid, and the burden of proving invalidity rests with NETGEAR. 35 U.S.C. § 282. The presumption of validity for the issued patent claim requires that an invalidity defense or counterclaim be proven by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 95 (2011). Clear and convincing evidence is evidence that gives rise to an "abiding conviction that the truth of [the] factual contentions are 'highly probable.'" *Colorado v. New Mexico*, 467 U.S. 310, 316 (1984) (quoting McCormick, Law of Evidence § 320, p. 679 (1954)). The presumption of validity and corresponding burden of proof in overcoming that presumption applies to each patent claim independently. *See Carroll Touch, Inc. v. Electro Mech. Sys., Inc.*, 15 F.3d 1573, 1581 n. 8 (Fed. Cir. 1993).

## 2. What Constitutes Prior Art

- 25. 35 U.S.C. § 102 (pre-AIA) provides that: "A person shall be entitled to a patent unless (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States[.]"
- The party challenging the validity of a patent bears the "burden of persuasion by clear and convincing evidence on all issues relating to the status of [a patent, patent application, or printed publication] as prior art." *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1576 (Fed. Cir. 1996); *Plexxikon Inc. v. Novartis Pharms. Corp.*, 525 F. Supp. 3d 1104, 1112 (N.D. Cal. Mar. 15, 2021) ("A party challenging patent validity has the burden to prove by clear and convincing evidence that an invalidating reference is prior art."). "Concomitant to the presumption of validity afforded to all patents is the rule that a party challenging the validity of a patent bears the burden of establishing all facts necessary to prove invalidity." *Proctor & Gamble Co. v. Paragon Trade Brands, Inc.*, 989 F. Supp. 547, 585 (D. Del. 1997).
- 27. The defendant bears the initial burden of production that a reference is prior art when challenging a patent's validity. *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1327 (Fed. Cir. 2008). Then, the burden of production shifts to the plaintiff who must show that the references are not prior art because the asserted claim is entitled to a priority date (*e.g.*, an actual reduction to practice date) prior to the alleged prior art. *Id.*; *see also Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1379-80

(Fed. Cir. 2015). The burden then shifts back to the challenging party to prove that the patentee's invention (1) "was not actually reduced to practice as argued, or that the [] prior art was entitled to the benefit of a filing date prior to the date of the [inventor's] reduction to practice." *Dynamic Drinkware*, 800 F.3d at 1380.

Under § 102(b) (pre-AIA), a public use or sale (or offer to sell) must occur in the United States at least one year prior to the Asserted Patent's priority date to qualify as prior art. 35 U.S.C. § 102(b). For a device to qualify as prior art, knowledge or use of the device must be publicly accessible; "secret or confidential third-party uses do not invalidate later-filed patents." *Sunoco Partners Mktg. & Terminals L.P. v. Powder Springs Logistics, LLC*, C.A. No. 17-1390- LPS-CJB, 2020 WL 9438750, at \*2, \*6 (D. Del. Feb. 20, 2020) (quoting *Dey, L.P. v. Sunovion Pharms., Inc.*, 715 F.3d 1351, 1355 (Fed. Cir. 2013)); *Delano Farms Co. v. Cal. Table Grape Comm'n*, 778 F.3d 1243, 1247 (Fed. Cir. 2015) (same).

# 3. Patent Eligibility Under 35 U.S.C. § 101

- 29. Under 35 U.S.C. § 101, "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."
- 30. Patent eligibility is a question of law and is based on underlying facts. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1365, 1368 (Fed. Cir. 2018). NETGEAR has the burden of proving ineligibility by clear and convincing evidence. *Id.* at 1368.
- 31. The Supreme Court has held that "[1] aws of nature, natural phenomena, and abstract ideas are not patentable." *Ass'n Molecular Pathology v. Myriad Genetics, Inc.*,

- 569 U.S. 576, 590 (2013). The "concern that drives this exclusionary principle [is] one of pre-emption." *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014).
- 32. The Supreme Court set forth a two-part test in *Alice* to determine patent eligibility under 35 U.S.C. § 101, building on its prior decision in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, 566 U.S. 66 (2012). Step one asks "whether the claims at issue are directed to one of those patent-ineligible concepts." 573 U.S. at 217. Step two "consider[s] the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application." *Id*.
- 33. Alice step one requires an assessment of what the claims are "directed to," being "careful to avoid oversimplifying the claims." McRO, Inc. v. Bandai Namco Games Am. Inc., 837 F.3d 1299, 1313 (Fed. Cir. 2016). Federal Circuit precedent forbids overgeneralizing claims by failing to "articulate what the claims are directed to with enough specificity to ensure the step one inquiry is meaningful." Thales Visionix Inc. v. United States, 850 F.3d 1343, 1346–49 (Fed. Cir. 2017).
- 34. *Alice* step two asks whether the claims "involve more than performance of well- understood, routine, [and] conventional activities previously known to the industry." *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1367–68 (Fed. Cir. 2018). This involves consideration of the claims as a whole, not claim limitations in isolation. *Alice*, 573 U.S. at 218 n. 3.
- 35. The Federal Circuit recently confirmed that "useful improvements to computer networks," are patentable under Step two of *Alice* "regardless of whether the network is comprised of standard computing equipment." *Coop. Ent., Inc. v. Kollective*

Tech., Inc., 50 F.4th 127, 135 (Fed. Cir. 2022) (citing *Thales Visionix*, 850 F.3d at 1349 (Fed. Cir. 2017) and *Enfish*, *LLC v. Microsoft* Corp., 822 F.3d 1327, 1337-38 (Fed. Cir. 2016).) In *Cooperative*, the claims related to a content-sharing network. Prior art controlled networks were used to share content, but the *Cooperative* claims used peer nodes outside those networks for content distribution, which was inventive even if based on conventional components. *Id.* at 131-35. In *Enfish*, the court explained that "[s]oftware can make non-abstract improvements to computer technology just as hardware improvements can... We thus see no reason to conclude that all claims directed to improvements in computer-related technology, including those directed to software, are abstract..." *Enfish*, 822 F.3d at 1335.

## 4. Obviousness under § 103

- 36. "The determination of obviousness . . . is a legal conclusion based on underlying facts." *Allergan, Inc. v. Sandoz Inc.*, 726 F.3d 1286, 1290–91 (Fed. Cir. 2013). A patent claim is invalid for obviousness if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103 (pre-AIA).
- 37. The court can consider the following factors when determining a person of ordinary skill in the art, who is a hypothetical person that would know the relevant art at the time of the invention: (1) "educational level of the inventor; (2) types of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field. These factors are not exhaustive but are merely a guide to determining the level of ordinary skill in the art." *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007) (internal citation omitted).

- 38. If the asserted prior art was considered by an examiner during prosecution, the clear and convincing burden of proof to prove obviousness is more difficult to meet. Mintz v. Dietz & Watson, Inc., 679 F.3d 1372, 1377 (Fed. Cir. 2012) (vacating summary judgment of obviousness, noting that art applied by district court had been considered by Patent Office); Guangdong Alison Hi- Tech Co. v. Int'l Trade Comm'n, 936 F.3d 1353, 1364-65 (Fed. Cir. 2019) (affirming finding of no inherent anticipation, in part because applicants distinguished the reference during original prosecution: "arguments and references already considered by the Patent Office may carry less weight with the fact finder"); Shire LLC v. Amneal Pharms., LLC, 802 F.3d 1301, 1307 (Fed. Cir. 2015) (affirming summary judgment of non-obviousness; added burden of overcoming deference to examiner where asserted reference listed on face of patent); BlephEx, LLC v. Myco Indus., Inc., 24 F.4th 1391, 1402-03 (Fed. Cir. 2022) (affirming preliminary injunction; Examiner presumed to have considered prior art listed on face of patent); Cadence Pharms., Inc. v. Exela PharmSci, Inc., 780 F.3d 1364, 1375 (Fed. Cir. 2015) (citing Examiner's initial rejection of claims on same combination now argued by challenger, as a factor contributing to challenger's "difficult burden" on appeal to overturn non-obviousness judgment).
- 39. The "underlying factual considerations in an obviousness analysis include the scope and content of the prior art, the differences between the prior art and the claimed invention, the level of ordinary skill in the art, and any relevant secondary considerations[,]" which include "commercial success, long-felt but unsolved needs, failure of others, and unexpected results." *Allergan*, 726 F.3d at 1290–91 (citations omitted); *see Graham v. John Deere Co.*, 383 U.S. 1, 7–18 (1966); *see also KSR Int'l*

- Co. v. Teleflex Inc., 550 U.S. 398, 415 (2007) (re-affirming the *Graham* factor analysis as the appropriate test for determining obviousness).
- 40. Secondary considerations of non-obviousness, also called objective indicia of non-obviousness, "may often be the most probative and cogent evidence" available. *Ortho-McNeil Pharm., Inc. v. Mylan Lab'ys, Inc.*, 520 F.3d 1358, 1365 (Fed. Cir. 2008) (quoting *Catalina Lighting*, 295 F.3d at 1288); *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Contractors USA, Inc.*, 617 F.3d 1296, 1305 (Fed. Cir. 2010).
- 41. A defendant has the burden of proof with respect to all of the *Graham* factors, including any alleged absence of objective indicia of nonobviousness. *Am. Hosp. Supply Corp. v. Travenol Lab'ys, Inc.*, 745 F.2d 1, 8 (Fed. Cir. 1984).
- 42. The pertinent analysis is how a person of ordinary skill in the art would have viewed the relevant art to ascertain whether the subject matter as a whole "would have been obvious at the time the invention was made." 35 U.S.C. § 103(a) (2004) (emphasis added); see also KSR, 550 U.S. at 405.
- 43. "Importantly, the great challenge of the obviousness judgment is proceeding without any hint of hindsight." *Star Sci., Inc. v. R.J. Reynolds Tobacco Co.*, 655 F.3d 1364, 1375 (Fed. Cir. 2011); *Sanofi-Synthelabo v. Apotex, Inc.*, 550 F.3d 1075, 1088 (Fed. Cir. 2008). It is always inappropriate in a §103 obviousness analysis to retrace the path of the inventor with hindsight, and discount the number and complexity of the alternatives. *Ortho-McNeil*, 520 F.3d at 1363–64. "[A]t the time of invention, the inventor's insights, willingness to confront and overcome obstacles, and yes, even serendipity, cannot be discounted." *Id.*

- 44. "An invention is not obvious simply because all of the claimed limitations were known in the prior art at the time of the invention." *Forest Lab'ys, LLC v. Sigmapharm Lab'ys, LLC*, 918 F.3d 928, 934 (Fed. Cir. 2019). Instead, an obviousness determination requires finding *both* "that a skilled artisan would have been motivated to combine the teachings of the prior art ... and that the skilled artisan would have had a reasonable expectation of success in doing so." *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367-68 (Fed. Cir. 2016).
- With respect to motivation to combine, when a patent challenger contends that a patent is obvious in light of a combination or modification of prior art references, the patent challenger must point to clear and convincing evidence that shows that there was a reason to make the change. *Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 1356–57 (Fed. Cir. 2007); *Yamanouchi Pharm. Co. v. Danbury Pharmacal, Inc.*, 231 F.3d 1339, 1344–45 (Fed. Cir. 2000) (affirming that defendants "did not show sufficient motivation for one of ordinary skill in the art at the time of the invention to take any one of the following steps, let alone the entire complex combination"); *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1383 (Fed. Cir. 1986) ("Focusing on the obviousness of substitutions and differences instead of on the invention as a whole . . . was a legally improper way to simplify the difficult determination of obviousness.").
- 46. Unspecific and conclusory expert testimony is insufficient to support a finding of obviousness and is "fraught with hindsight bias." *ActiveVideo Networks, Inc. v. Verizon Commc'ns, Inc.*, 694 F.3d 1312, 1327 (Fed. Cir. 2012); *see also InTouch Techs., Inc. v. VGO Commc'ns, Inc.*, 751 F.3d 1327, 1352 (Fed. Cir. 2014) (rejecting

expert testimony that "primarily consisted of conclusory references to [the expert's] belief that one of ordinary skill in the art *could* combine these references, not that they *would* have been motivated to do so."); *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1361 (Fed. Cir. 2019) ("We [have] repeatedly expressed concerns that crediting such testimony risks allowing the challenger to use the challenged patent as a roadmap to reconstruct the claimed invention using disparate elements from the prior art— i.e., the impermissible *ex post* reasoning and hindsight bias that *KSR* warned against.").

- 47. "[K]nowledge of a problem and motivation to solve it are entirely different from motivation to combine particular references to reach the particular claimed method." *Innogenetics, N.V. v. Abbott Lab'ys*, 512 F.3d 1363, 1373–74 (Fed. Cir. 2008); *see also Cardiac Pacemakers, Inc. v. St. Jude Med., Inc.*, 381 F.3d 1371, 1377 (Fed. Cir. 2004) ("Recognition of a need does not render obvious the achievement that meets that need Recognition of an unsolved problem does not render the solution obvious.").
- An invention is not obvious over a proposed modification or combination of the prior art that is taught away from, *i.e.*, "when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *Allergan, Inc. v. Sandoz Inc.*, 796 F.3d 1293, 1305-07 (Fed. Cir. 2015) (quoting *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) (finding claims directed to glaucoma treatment not obvious because the prior art taught away from claim limitations)); *see also Unigene Lab'ys, Inc. v. Apotex Inc.*, 655 F.3d 1352, 1361-63 (Fed. Cir. 2011); *Crocs, Inc. v. Int'l Trade Comm'n*, 598 F.3d 1294, 1308–10 (Fed. Cir. 2010) (explaining that criticisms of patent challenger's proposed modification taught away from

claimed invention).

49. The burden is on the challenging party to establish that a person of ordinary skill in the art would have a reasonable expectation of success in combining the prior art in the manner claimed by the Asserted Claims in addition to showing a motivation to combine. *Yamanouchi*, 231 F.3d at 1345. A person of ordinary skill in the art would not have a reasonable expectation of success in combining two references if the disclosures of those two references are "incompatible." *Samsung Elecs. Co. v. Elm 3DS Innovations, LLC*, 925 F.3d. 1373, 1381 (Fed. Cir. 2019).

## 5. 35 U.S.C. § 112

## a. Written Description

- 50. Section 112 of the Patent Act provides that "[t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art ... to make and use the same[.]" 35 U.S.C. § 112, ¶ 1.
- 51. If the specification and the existing knowledge in the art reasonably convey "to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date" the written description requirement is met. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010). For a patent claim to be held invalid for lack of written description, a challenger must prove, by clear and convincing evidence, that the patent fails to provide a person of ordinary skill in the art a basis "to recognize that [the inventor] invented what is claimed." *Id.* (alterations in original). The test for reasonably conveying possession of an invention is flexible, "requir[ing] an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art." *Id.* Moreover, courts have held that a

satisfactory description may be found in originally-filed claims or any other portion of the originally-filed specification. *See In re Koller*, 613, F.2d 819, 821 (C.C.P.A. 1980).

- of one of ordinary skill in the art as of the relevant filing date." *Immunex Corp. v. Sandoz Inc.*, 964 F.3d 1049, 1063 (Fed. Cir. 2020) (quoting *Falko-Gunter Falkner v. Inglis*, 448 F.3d 1357, 1363 (Fed. Cir. 2006)). "The [written description] requirement is applied in the context of the state of knowledge at the time of the invention." *Zoltek Corp. v. United States*, 815 F.3d 1302, 1308 (Fed. Cir. 2016). Therefore, the specification "need not include information that is already known and available to the experienced public." *Id.* (quoting *Space Sys./Loral, Inc. v. Lockheed Martin Corp.*, 405 F.3d 985, 987 (Fed. Cir. 2005)).
- 53. Failing to "specifically mention a limitation that later appears in the claims is not a fatal one when one skilled in the art would recognize upon reading the specification that the new language reflects what the specification shows has been invented." *All Dental Prodx, LLC v. Advantage Dental Prods., Inc.*, 309 F.3d 774, 779 (Fed. Cir. 2002).
- 54. The written description requirement is satisfied if a person of ordinary skill in the art would find that the specification is "reasonably clear what the invention is and that [it] conveys that meaning." *Id*. The "reasonably conveys" standard does not require the disclosure and claims to match exactly. *Ariad Pharms.*, 598 F.3d at 1351; *id*. at 1352 ("[T]he [written] description requirement does not demand any particular form of disclosure or that the specification recite the claimed invention *in haec verba*" (internal citation omitted)).

- 55. A claim may not be invalidated because the embodiments of the specification do not contain examples explicitly covering the full scope of the claim language. *See Ralston Purina Co. v. Far-Mar-Co.*, 772 F.2d 1570, 1575-76 (Fed. Cir. 1985) (holding that specification's disclosure preferring a lower operating range, yet indicating no upper limit, combined with the industry knowledge at the time, was sufficient for a person of ordinary skill in the art to discern that higher ranges could be used).
- 56. A patent applicant only needs to demonstrate, "with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed." *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991) (emphasis omitted).
- 57. "[A] patent claim is not necessarily invalid for lack of written description just because it is broader than the specific examples disclosed." *Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1371 (Fed. Cir. 2009). Moreover, "[a]n applicant is not required to describe in the specification every conceivable and possible future embodiment of his invention." *Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1365 (Fed. Cir. 2003) (quoting *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1344 (Fed. Cir. 2001)); *see also Lampi Corp. v. Am. Power Prods., Inc.*, 228 F.3d 1365, 1378 (Fed. Cir. 2000) (holding written description sufficient to support claims covering non-identical half-shells where patent drawings, the only cited written description support, only disclosed identical half-shells).

### V. DAMAGES

## A. Issues of Law

- 58. If NETGEAR is found liable for infringement of a valid claim, what amount of damages as reasonable royalties TrackThings has proven.
- 59. Whether TrackThings is entitled to an award of pre-judgment and/or post-judgment interest and the dollar amount of such award.
- 60. Whether TrackThings is entitled to an award of treble damages pursuant 35 U.S.C. § 284 due to willful infringement.
- 61. Whether TrackThings is entitled to an award of enhanced damages and the dollar amount of such award.
  - 62. Whether TrackThings is entitled to an award of attorneys' fees
- 63. Whether TrackThings is entitled to costs and, if so, the dollar amount of such costs.
- 64. Whether TrackThings is entitled to receive ongoing royalties from Defendants for post-judgment future infringement.

## B. Legal Standards

## 1. Damages Generally

65. If a jury finds a patent has been infringed, the patent owner may be awarded "damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court." 35 U.S.C. § 284. The patentee bears the burden of proof by a preponderance of the evidence to prove the amount of the damages it is entitled to. *Transclean Corp. v. Bridgewood Servs., Inc.*, 290 F.3d 1364, 1370 (Fed. Cir.

2002); see also SmithKline Diagnostics, Inc. v. Helena Lab'ys Corp., 926 F.2d 1161, 1164 (Fed. Cir. 1991).

# 2. Reasonable Royalty

- an amount no less than a reasonable royalty." *Dow Chem. Co. v. Mee Indus., Inc.*, 341 F.3d 1370, 1381-82 (Fed. Cir. 2003); *see also Del Mar Avionics, Inc. v. Quinton Instrument Co.*, 836 F.2d 1320, 1326- 27 (Fed. Cir. 1987). The basis of reasonable royalties may be the "supposed result of hypothetical negotiations between the plaintiff and defendant." *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1357 (Fed. Cir. 2012) (quoting *Rite–Hite*, 56 F.3d at 1554 (en banc)).
- 67. "While the Federal Circuit has not prescribed a specific methodology for calculating a reasonable royalty, courts rely upon the fifteen factors set forth in *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970)." *St. Clair Intell. Prop. Consultants, Inc. v. Canon, Inc.*, C.A. No. 03-241 JJF, 2004 WL 2213562, at \*2 (D. Del. Sept. 28, 2004). These factors are:
  - 1. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.
  - 2. The rates paid by the licensee for the use of other patents comparable to the patent in suit.
  - 3. The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.
  - 4. The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly.
  - 5. The commercial relationship between the licensor and licensee,

- such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter.
- 6. The effect of selling the patented specialty in promoting sales of other products of the licensee; that existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales.
- 7. The duration of the patent and the term of the license.
- 8. The established profitability of the product made under the patent; its commercial success; and its current popularity.
- 9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.
- 10. The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention.
- 11. The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use.
- 12. The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions.
- 13. The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.
- 14. The opinion testimony of qualified experts.
- 15. The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee— who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention— would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.

Georgia-Pacific Corp., 318 F. Supp. at 1120.

- 68. "[I]n conducting the hypothetical negotiation, [a factfinder] is permitted to look to events and facts that occurred after the infringement began." *Mobil Oil Corp. v. Amoco Chems. Corp.*, 915 F. Supp. 1333, 1353 (D. Del. 1995).
- 69. In lieu of an injunction, courts, in their discretion, may award an ongoing royalty for future patent infringement. *E.g.*, *Bos. Sci. Corp. v. Cordis Corp.*, 838 F. Supp. 2d 259, 275-76 (D. Del. 2012) (awarding an ongoing 32% royalty rate in lieu of an injunction); *Vectura Ltd. v. GlaxoSmithKline LLC*, C.A. No. 16-638-RGA, 2019 WL 4346502, at \*6-8 (D. Del. Sept. 12, 2019) (granting ongoing royalty).
- 70. In cases of induced infringement, "[t]he damages award ought to be correlated, in some respect, to the extent the infringing method is used by consumers." *Lucent Techs., Inc. v. Gateway, Inc.*, 580 F.3d 1301, 1334 (Fed. Cir. 2009).

# 3. Costs, Prejudgment, and Post Trial Interest

- 71. Pursuant to Federal Rule of Civil Procedure 54(d), the prevailing party should be allowed to recuperate its costs. Under 28 U.S.C. § 1920, the prevailing party may recover the following costs:
  - (1) fees of the clerk and marshal;
  - (2) fees for printed or electronically recorded transcripts necessarily obtained for use in this case;
  - (3) fees and disbursements for printing and witnesses;
  - (4) fees for exemplification and the costs of making copies of any materials where the copies are necessarily obtained for use in the case;
  - (5) docket fees under 28 U.S.C. § 1923; and
  - (6) compensation of court appointed experts, compensation of

interpreters, and salaries, fees, expenses, and costs of special interpretation services under 28 U.S.C. § 1828.

28 U.S.C. §1920; see also D. Del. L.R. 54.1.

- Federal law indicates that "[i]nterest shall be allowed on any money judgment in a civil case recovered in a district court." 28 U.S.C. § 1961. The Supreme Court explained that "prejudgment interest should ordinarily be awarded where necessary to afford the plaintiff full compensation for the infringement." *Gen. Motors Corp. v. Devex Corp.*, 461 U.S. 648, 654 (1983). Prejudgment interest "serves to make the patent owner whole, for damages properly include the foregone use of money of which the patentee was wrongly deprived." *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1574 (Fed. Cir. 1996). Thus, granting "prejudgment interest is the rule, not the exception." *Id.* "[P]rejudgment interest should be awarded from the date of infringement to the date of judgment." *Nickson Indus., Inc. v. ROL Mfg. Co.*, 847 F.2d 795, 800 (Fed. Cir. 1988) (citing *Gen. Motors*, 461 U.S. at 656).
- 73. Section 1961(a) of Title 28 of the United States Code declares that "[i]nterest shall be allowed on any money judgment in a civil case recovered in a district court." 28 U.S.C. § 1961. "Post-judgment interest is awarded on monetary judgments recovered in all civil cases," which includes cases for patent infringement. *Transmatic, Inc. v. Gulton Indus., Inc.*, 180 F.3d 1343, 1347 (Fed. Cir. 1999). Post-judgment interest is governed by regional circuit law. *Id.* at 1348. Interest begins to accrue on the date of the entry of judgment. *Loughman v. Consol-Pennsylvania Coal Co.*, 6 F.3d 88, 97 (3d Cir. 1993). This District's courts regularly grant post-judgment interest in patent infringement cases. *See nCUBE Corp. v. SeaChange Int'l, Inc.*, 313 F. Supp. 2d 361, 392 (D. Del. 2004), *aff'd*, 436 F.3d 1317 (Fed. Cir. 2006); *TruePosition Inc. v. Andrew Corp.*,

611 F. Supp. 2d 400, 414 (D. Del. 2009), aff'd, 389 F. App'x 1000 (Fed. Cir. 2010).

# 4. Treble Damages

74. "The court may increase the damages up to three times the amount found or assessed." 35 U.S.C. § 284. A Court can award treble damages based on a finding of willful infringement. *E.g.*, *SRI Int'l, Inc. v. Advanced Tech. Lab'ys, Inc.*, 127 F.3d 1462, 1468-69 (Fed. Cir. 1997) (affirming award of treble damages based on willful infringement).

# 5. Enhanced Damages and Attorneys' Fees

- 75. Enhanced damages are "damages up to three times the amount found or assessed." 35 U.S.C. § 284. A Court should consider "egregiousness of the defendant's conduct based on all the facts and circumstances" in its determination of whether to award enhanced damages. *Read Corp. v. Portec Inc.*, 970 F.2d 816, 826-27 (Fed. Cir. 1992), *abrogated in part on other grounds by Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 975 (Fed. Cir. 1995) (en banc). Although there is no "rigid formula for awarding enhanced damages under § 284," TrackThings must prove enhanced damages by a "preponderance of the evidence." *Halo*, 579 U.S. at 104-07. Factors courts assess when deciding whether an infringer's conduct was egregious include:
  - (1) whether the infringer deliberately copied the invention; (2) whether the infringer, when aware of the patent, investigated and formed a good faith belief of invalidity or noninfringement; (3) the infringer's behavior as a party to litigation; (4) defendant's size and financial condition; (5) closeness of the case; (6) duration of defendant's misconduct; (7) remedial action by the defendant; (8) defendant's motivation for harm; and (9) whether defendant attempted to conceal its misconduct.

See Liquid Dynamics, 449 F.3d at 1225 (citing Read Corp., 970 F.2d at 826–27, superseded on other grounds as recognized in Hoechst Celanese Corp. v. BP Chems. Ltd., 78 F.3d 1575, 1578 (Fed. Cir. 1996)); see also Apple, 258 F. Supp. 3d at 1022-23.

The subjective willfulness of a patent infringer, intentional or knowing, may warrant enhanced damages, without regard to whether his infringement was objectively reckless."

Halo, 579 U.S. at 103-04. While willfulness is necessary for enhanced damages, recklessness is not. *Id.* at 103-06; *Finjan, Inc. v. Blue Coat Sys., Inc.*, No. 13-cv-3999-BLF, 2016 WL 3880774, at \*16 (N.D. Cal. July 18, 2016), *rev'd in part on other grounds*, 879 F.3d 1299 (Fed. Cir. 2018). "The subjective willfulness of a patent infringer, intentional or knowing, may warrant enhanced damages, without regard to whether his infringement was objectively reckless." *Halo*, 579 U.S. at 105.

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

**JURY TRIAL DEMANDED** 

EXHIBIT 5: NETGEAR'S STATEMENT OF CONTESTED ISSUES OF LAW

#### I. INTRODUCTION

- 1. Pursuant to Local Rule 16.3(c)(5) of the Local Rules of Civil Practice and Procedure of the United States District Court for the District of Delaware and the schedule set forth in the governing Scheduling Order (D.I. 366), Defendant NETGEAR, Inc. ("NETGEAR") respectfully submits the following statement of issues of law that remain to be litigated in the above-captioned matter.
- 2. The following statements are not exhaustive. NETGEAR reserves the right to modify or amend this Exhibit to the extent necessary to reflect any future rulings by the Court, to supplement or amend this Exhibit to fairly respond to any new issues that TrackThings LLC ("TrackThings") may raise, or to address any additional discovery produced by TrackThings. To the extent NETGEAR's statement of contested facts that remain to be litigated, which is submitted as Exhibit 3 hereto, contains issues of law, those issues are incorporated herein by reference. Moreover, if any issue of law identified below should properly be considered an issue of fact, then such statement should be considered to be part of NETGEAR's statement of contested facts that remain to be litigated.
- 3. Further, NETGEAR's identification of the issues of law that remain to be litigated on issues where TrackThings bears the burden of proof is based on its understanding of the arguments that TrackThings has put forth to date. To the extent TrackThings attempts to introduce different or additional legal arguments to meet their burden of proof, NETGEAR reserves its rights to contest those legal arguments, and to present any and all rebuttal evidence and argument in response to those arguments, and will not be bound by this summary of remaining legal issues.

## II. PRESERVED ISSUES

4. The statement of issues of law herein are without waiver to NETGEAR's pending

## motions, including:

- NETGEAR's motion for summary judgment of invalidity of the '442 patent under 35 U.S.C. §§ 101 and 112;
- NETGEAR's two motions to exclude the testimony of Mr. Stephen A. Holzen regarding damages;
- NETGEAR's motions in limine and other pretrial filings.
- 5. NETGEAR incorporates by reference all cited authorities in NETGEAR's briefing, including the opposition briefs to TrackThings' motions. *See* D.I. 243, 244, 245, 261, 305, 306, 307, and 374.

## III. INFRINGEMENT

#### A. Issues of Law

- 6. Whether TrackThings has proven by a preponderance of the evidence direct infringement of claims 1, 5, 7, 9, 15, 17, 23, and 25 (the "asserted claims") of the '442 patent through end-users' use in the United States of certain Orbi and Nighthawk mesh products (collectively, the "accused products").
- 7. Whether TrackThings has proven by a preponderance of the evidence that NETGEAR induces infringement under 35 U.S.C. § 271(b) by actively encouraging customers to directly infringe the asserted claims by using certain Orbi and Nighthawk mesh products in this country.
- 8. Whether TrackThings has proven by a preponderance of the evidence that NETGEAR willfully infringes by infringing the claims when NETGEAR knew or should have

<sup>&</sup>lt;sup>1</sup> Based on TrackThings' proposed verdict form, NETGEAR understands that these are the only asserted claims for trial. NETGEAR reserves the right to amend this statement if TrackThings changes its asserted claims.

known of the '442 patent.

# B. Legal Authority

- 9. TrackThings, as the plaintiff, bears the burden to prove infringement for all elements of the asserted claims of the '442 patent by a preponderance of the evidence. *See Ultra-Tex Surfaces, Inc. v. Hill Bros. Chem. Co.*, 204 F.3d 1360, 1364 (Fed. Cir. 2000) ("[I]t is axiomatic that the patentee bears the burden of proving infringement.") (emphasis omitted); *see also SmithKline Diagnostics, Inc. v. Helena Lab'ys Corp.*, 859 F.2d 878, 889 (Fed. Cir. 1988). This burden never shifts to NETGEAR. *See Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1327 (Fed. Cir. 2008) (stating that the "burden to prove infringement" never shifts from the plaintiff to the defendant and that "the risk of decisional uncertainty stays on the proponent of the proposition").
- 10. To determine whether a patentee has met this burden, courts apply a two-part test: "First, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process." *Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp.*, 149 F.3d 1309, 1315 (Fed. Cir. 1998) (citation omitted); *Grober v. Mako Prods., Inc.*, 686 F.3d 1335, 1344 (Fed. Cir. 2012). The first step is a question of law; the second step is a question of fact. *See Wavetronix v. EIS Elec. Integrated Sys.*, 573 F.3d 1343, 1354 (Fed. Cir. 2009); *Alza Corp. v. Andrx Pharms., LLC*, 607 F. Supp. 2d 614, 623 (D. Del. 2009).

# 1. Direct Infringement – Literal Infringement

- 11. A party directly infringes if it "without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor[.]" 35 U.S.C. § 271(a).
  - 12. An accused product literally infringes only "when every limitation recited in the

claim appears in the accused device, i.e., when 'the properly construed claim reads on the accused device exactly." *DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1331 (Fed. Cir. 2001) (citing *Amhil Enters. Ltd. v. Wawa, Inc.*, 81 F.3d 1554, 1562 (Fed. Cir. 1996)).

infringement." *Mas-Hamilton Grp. v. LaGard, Inc.*, 156 F.3d 1206, 1211 (Fed. Cir. 1998); *Bayer AG v. Elan Pharm. Rsch. Corp.*, 212 F.3d 1241, 1247 (Fed. Cir. 2000) ("If any claim limitation is absent from the accused device, there is no literal infringement as a matter of law."); *Glaxo, Inc. v. Novopharm, Ltd.*, 110 F.3d 1562, 1566 (Fed. Cir. 1997) ("It is elementary patent law that all limitations are material," and plaintiffs are "required to establish the presence of each limitation of the asserted claims.").

# 2. Direct Infringement – Doctrine of Equivalents

- 14. If a patentee cannot establish literal infringement because an accused product does not meet every element of an asserted claim, the patentee may establish infringement under doctrine of equivalents "if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 21, 29 (1997) (citing *Graver Tank & Mfg. Co. v. Linde Air Prods. Co.*, 339 U.S. 605, 609 (1950)).
- 15. To prove direct infringement under the doctrine of equivalents, TrackThings must show that accused products "perform[] substantially the same function in substantially the same way to obtain the same result." *Inline Connection Corp. v. AOL Time Warner Inc.*, 364 F. Supp. 2d 417, 446 (D. Del. 2005) (quoting *Graver Tank*, 339 U.S. at 608).
- 16. A theory of equivalents cannot be proper, and there cannot be a finding of infringement under the doctrine of equivalents, if such theory would broaden the range of

equivalence so much that it would entirely vitiate the claim limitation. See Freedman Seating Co. v. Am. Seating Co., 420 F.3d 1350, 1358–62 (Fed. Cir. 2005) (reversing the district court's grant of summary judgment and remanded to enter a judgment of non-infringement because the district court's infringement finding entirely vitiated the claim limitation); see also Tronzo v. Biomet, Inc., 156 F.3d 1154, 1160 (Fed. Cir. 1998) (finding that there was insufficient evidence to support the jury's finding of infringement when a theory of equivalence read out a claim limitation). "[I]f a court determines that a finding of infringement under the doctrine of equivalents would entirely vitiate a particular claimed element, then the court should rule that there is no infringement under the doctrine of equivalents." Power Integrations, Inc. v. Fairchild Semiconductor Int'l, Inc., 843 F.3d 1315, 1344 (Fed. Cir. 2016) (quoting Lockheed Martin Corp. v. Space Sys./Loral, Inc., 324 F.3d 1308, 1321 (Fed. Cir. 2003)) (reversing the jury's verdict of infringement under the doctrine of equivalents when this finding vitiated the claim limitation); see also Olaf Soot Design, LLC v. Daktronics, Inc., 839 F. App'x 505, 511 (Fed. Cir. 2021) (reversing the jury's finding of infringement when under the proper claim construction, a finding of infringement under the doctrine of equivalents would eliminate the claim limitation).

## 3. Indirect Infringement – Induced Infringement

- 17. "Whoever actively induces infringement of a patent shall be liable as an infringer." 35 U.S.C. § 271(b). Direct infringement is a necessary predicate for a finding of induced infringement in ordinary patent infringement cases. *See Limelight Networks, Inc. v. Akamai Techs., Inc.*, 572 U.S. 915, 920–21 (2014); *see also Niazi Licensing Corp. v. St. Jude Med. S.C., Inc.*, 30 F.4th 1339, 1351–53 (Fed. Cir. 2022) (affirming summary judgment of no induced infringement where the patentee failed to show any act of direct infringement).
  - 18. TrackThings "must show that an alleged infringer knowingly induced another to

commit an infringing act to establish induced infringement under section 271(b)." *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1374 (Fed. Cir. 2003) (citing *Manville Sales Corp. v. Paramount Sys., Inc.*, 917 F.2d 544, 553 (Fed. Cir. 1990)). TrackThings must first prove that NETGEAR "knew of the patent." *DSU Med. Corp. v. JMS Co.*, 471 F.3d 1293, 1304–05 (Fed. Cir. 2006). TrackThings must also prove that NETGEAR knew that "the induced acts constitute patent infringement." *Glob.-Tech Appliances, Inc. v. SEB S.A.*, 563 U.S. 754, 756, 766 (2011); *see also Commil USA, LLC v. Cisco Sys., Inc.*, 575 U.S. 632, 642 (2015) ("[Induced infringement] requires proof the defendant knew the acts were infringing.").

19. Furthermore, inducement requires "specific intent to cause another to infringe." *Manville Sales*, 917 F.2d at 553–54 (finding that district court's holding of induced infringement was contrary to law when there was no evidence of specific intent); *Wordtech Sys. v. Integrated Networks Sols., Inc.*, 609 F.3d 1308, 1316 (Fed. Cir. 2010) ("Inducement requires intent."). "[I]nducement requires evidence of culpable conduct, directed to encouraging another's infringement, not merely that the inducer had knowledge of the direct infringer's activities." *DSU Med. Corp.*, 471 F.3d at 1306.

# 4. Willful Infringement

- 20. TrackThings has the burden to prove by a preponderance of the evidence that NETGEAR's infringement was willful. This requires a showing that NETGEAR's infringement was "deliberate," "consciously wrongful," and "without any reason to suppose [its] conduct [was] arguably defensible." *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 579 U.S. 93, 103–05 (2016).
- 21. Awareness of the patents-in-suit, without more, cannot establish willful infringement. *Bayer Healthcare LLC v. Baxalta Inc.*, 989 F.3d 964, 988 (Fed. Cir. 2021); *Honeywell Int'l Inc. v. Universal Avionics Sys. Corp.*, 585 F. Supp. 2d 636, 642 (D. Del. 2008)

("The simple fact that infringement exists does not equate to willful infringement, even where the accused has knowledge or is aware of the patent."). TrackThings must also show NETGEAR "had a specific intent to infringe at the time of the challenged conduct." *Bayer Healthcare*, 989 F.3d at 987. Willful infringement is one that is "willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or—indeed—characteristic of a pirate." *Id.* (quoting *Halo Elecs.*, 579 U.S. at 103–04).

22. A finding of willful infringement does not mandate that enhanced damages must be awarded. Rather, whether to award enhanced damages is left to the discretion of the Court. *See* 35 U.S.C. § 284; *see also Halo Elecs.*, 579 U.S. at 104. Only truly egregious conduct warranting "punitive" or "vindictive" sanctions warrants an award of enhanced damages. *Halo Elecs.*, 579 U.S. at 98.

#### IV. INVALIDITY

#### A. Issues of Law

- 23. Whether TrackThings has proven by a preponderance of the evidence that the asserted claims are entitled to an earlier priority date of January 2, 2006.
- 24. Whether NETGEAR has proven by clear and convincing evidence that the asserted claims are invalid for obviousness under 35 U.S.C. § 103, lack of patentable subject matter under 35 U.S.C. § 101, and lack of adequate written description under 35 U.S.C. § 112.

## B. Legal Authority

#### 1. Presumption of Validity

- 25. Patents are presumed valid, and a party challenging the validity of a patent bears the burden to prove invalidity by clear and convincing evidence. 35 U.S.C. § 282(a).
  - 26. "If the PTO did not have all material facts before it, . . . the challenger's burden to

persuade the jury of its invalidity defense by clear and convincing evidence may be easier to sustain." *Microsoft Corp. v. i4i Ltd. P'ship*, 564 U.S. 91, 110–111 (2011).

# 2. Prior Art and Priority Date

- 27. TrackThings' Statement of Contested Issues of Law seemingly asserts that whether NETGEAR proved that a reference is prior art is a contested issue for trial. TrackThings failed to raise the argument that any of NETGEAR's relied-on references are not prior art, and it is therefore not an issue TrackThings can present at trial. The sole dispute related to whether a reference is prior art is what priority date the '442 patent is entitled to. TrackThings, not NETGEAR, bears the burden of proof to establish its claimed priority date. For completeness, NETGEAR provides case law below.
- by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or ... (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for the purposes of this subsection of an application filed in the United States and was published under Article 21(2) of such treaty in the English language, or ... (g)(2) before such person's invention thereof, the invention was made in this country by another inventor who had

not abandoned, suppressed, or concealed it. In determining priority of invention under this subsection, there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other." 35 U.S.C. § 102 (pre-AIA).

- 29. TrackThings asserts that the asserted claims are entitled to a priority date of January 2, 2006, a date that is earlier than the effective filing date of March 1, 2007.<sup>2</sup> "The party alleging prior invention must establish prior invention by clear and convincing evidence." *Kenexa BrassRing, Inc. v. Taleo Corp.*, 751 F. Supp. 2d 735, 753 (D. Del. 2010); *Price v. Symsek*, 988 F.2d 1187, 1191 (Fed. Cir. 1993) (holding that a party alleging an earlier date of invention must establish conception and reduction to practice by clear and convincing evidence); *see also In re Magnum Oil Tools Int'l, Ltd.*, 829 F.3d 1364, 1376 (Fed. Cir. 2016) ("[A] patentee bears the burden of establishing that its claimed invention is entitled to an earlier priority date than an asserted prior art reference") (citing *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1380 (Fed. Cir. 2015)).
- 30. Conception has been defined as "the complete performance of the mental part of the inventive act" and it is "the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention as it is thereafter to be applied in practice[.]" *Townsend v. Smith*, 36 F.2d 292, 295, 4 U.S.P.Q. 269, 271 (C.C.P.A. 1930). "[A]n idea is definite and permanent when the inventor has a specific, settled idea, a particular solution to the problem at hand, not just a general goal or research plan he hopes to pursue." *Dawson v. Dawson*, 710 F.3d

<sup>2</sup> While "TrackThings contends that the date of invention is . . . at a minimum by May 1, 2007" in its proposed final jury instructions, this appears to be a typographical error since the non-provisional application that the '442 patent claims priority to was filed on March 1, 2007, as shown on the face of the patent.

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1347, 1352 (Fed. Cir. 2013). Merely expressing a problem to be solved is insufficient to constitute "conception" if the patent owner did not provide a solution to that problem. *Singh v. Brake*, 317 F.3d 1334, 1341 (Fed. Cir. 2003). "[C]onception is complete only when the idea is so clearly defined in the inventor's mind that only ordinary skill would be necessary to reduce the invention to practice, without extensive research or experimentation." *Dawson*, 710 F.3d at 1352 (quoting *Burroughs Wellcome Co. v. Barr Lab'ys, Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994)). In other words, a "substantially complete" idea is not a conception. *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55, 66 (1998).

- 31. A claimed invention is "reduced to practice" when it has been constructed, used, or tested sufficiently to show that it will work for its intended purpose or when the inventor files a patent application that fully describes how to make and use the invention. *Teva Pharm. Indus. Ltd. v. AstraZeneca Pharms. LP*, 661 F.3d 1378, 1383 (Fed. Cir. 2011). For example, "a process is reduced to practice when it is successfully performed. A machine is reduced to practice when it is assembled, adjusted and used." *Corona Cord Tire Co. v. Dovan Chem. Corp.*, 276 U.S. 358, 383 (1928). "An invention, though completed, is deemed abandoned, suppressed, or concealed if, within a reasonable time after completion, no steps are taken to make the invention publicly known. Thus, failure to file a patent application; to describe the invention in a publicly disseminated document; or to use the invention publicly, have been held to constitute abandonment, suppression or concealment." *Correge v. Murphy*, 705 F.2d 1326, 1330 (Fed. Cir. 1983).
- 32. "[A]n inventor's testimony alone is insufficient to prove conception [and reduction to practice]." *E.I. du Pont de Nemours & Co. v. Unifrax I LLC*, 921 F.3d 1060, 1075–76 (Fed. Cir. 2019); see also Price, 988 F.2d at 1194; Shu-Hui Chen v. Bouchard, 347 F.3d 1299, 1309-10

(Fed. Cir. 2003). There must be some corroborating evidence beyond the inventor's own testimony that confirms the inventor's testimony regarding conception and reduction to practice. *See Allergan, Inc. v. Apotex Inc.*, 754 F.3d 952, 967 (Fed. Cir. 2014). To corroborate a conception, there must be evidence of what the inventor has disclosed to others, and what that disclosure would fairly suggest to one of ordinary skill in the art. *See In re Jolley*, 308 F.3d 1317, 1323 (Fed. Cir. 2002).

## 3. Obviousness Under § 103

- 33. Obviousness is a question of law that is based on underlying issues of fact. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 427 (2007).
- 34. The standard for whether a patent claim is obvious is whether "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a) (pre-AIA). Obviousness is based on four underlying factual determinations: (1) "the scope and content of the prior art"; (2) "differences between the prior art and the claims at issue"; (3) "the level of ordinary skill in the pertinent art"; and (4) "secondary considerations," if any, of nonobviousness. *KSR*, 550 U.S. at 406-07 (citing *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966)).
- 35. "[T]he scope of the relevant prior art . . . include[s] that reasonably pertinent to the particular problem with which the inventor was involved." *In re GPAC Inc.*, 57 F.3d 1573, 1577 (Fed. Cir. 1995) (quotation omitted). "A reference is reasonably pertinent if, even though it may be in a different field of endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem." *Id.* at 1578 (quotation omitted). "If a reference disclosure relates to the same problem as that

addressed by the claimed invention, that fact supports use of that reference in an obviousness [finding]." *Id.* (quotation omitted).

- 36. Obviousness is judged from the perspective of a person of ordinary skill in the art at the time the alleged invention was made. *See Takeda Chern. Indus. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 1355 (Fed. Cir. 2007). A person of ordinary skill in the art is a hypothetical person who is "presumed to be aware of all the pertinent prior art." *Standard Oil Co. v. Am. Cyanamid Co.*, 774 F.2d 448, 454 (Fed. Cir. 1985). In determining the level of ordinary skill in the art, a court should consider the following factors: (1) the types of problems encountered in the art; (2) prior art solutions to those problems; (3) the rapidity with which innovations are made; (4) the sophistication of the technology involved; and (5) the educational level of active workers in the field. *See Daiichi Sankyo Co., Ltd. v. Apotex Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007).
- 37. Where a claim "simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious." *KSR*, 550 U.S. at 417 (quotation omitted). "Common sense teaches . . . that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 420; *see also Leapfrog Enters.v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161-62 (Fed. Cir. 2007).
- 38. In general, a claim is invalid for obviousness if "a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention," and "would have had a reasonable expectation of success in doing so." *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007). The references need not contain "precise teachings directed to the specific subject matter of the challenged claim" for a person of ordinary skill in the art to be

motivated to combine the references. *KSR*, 550 U.S. at 418. Rather, a court must "take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 418. The Federal Circuit has "repeatedly held" that a combination may be obvious "even absent any hint of suggestion in the [prior art] references themselves." *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1368 (Fed. Cir. 2006); *see also Allergan v. Apotex,* 754 F.3d at 963-64. A court that requires the prior art "clearly and unequivocally [to] disclose" a "motivation to combine" therefore "err[s] by taking an overly cramped view of what the prior art teaches." *Allergan v. Apotex,* 754 F.3d at 963-64; *see also Motorola, Inc. v. Interdigital Tech Corp.*, 121 F.3d 1461, 1472 (Fed. Cir. 1997) ("[T]here is no requirement that the prior art contain an express suggestion to combine known elements to achieve the claimed invention.").

- 39. "[T]he expectation of success need only be reasonable, not absolute." *Pfizer*, 480 F.3d at 1364; *see also Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006); *Allergan, Inc. v. Sandoz Inc.*, 726 F.3d 1286, 1292 (Fed. Cir. 2013); *In re Merck*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). And routine experimentation on the part of an artisan does not support nonobviousness. *See Pfizer*, 480 F.3d at 1368.
- 40. "[O]nce a challenger has presented a prima facie case of invalidity, the patentee has the burden of going forward with rebuttal evidence." *Pfizer*, 480 F.3d at 1360. If the patentee fails to do so, the patent cannot be found valid. *See*, *e.g.*, *Ralston Purina Co. v. Far-Mar-Co.*, 772 F.2d 1570, 1573 (Fed. Cir. 1985).
- 41. "While th[e] burden of persuasion remains with the challenger, a patentee bears the burden of production with respect to evidence of secondary considerations of nonobviousness." *ZUP, LLC v. Nash Mfg., Inc.*, 896 F.3d 1365, 1373-74 (Fed. Cir. 2018). Secondary considerations

include: unexpected results, failure of others, skepticism of experts or praise of the alleged invention, the existence of a long-felt but unsolved problem, commercial success, or copying of the alleged invention. *See, e.g., Graham*, 383 U.S. at 17–18; *Asyst Techs., Inc. v. Emtrak, Inc.*, 544 F.3d 1310, 1316 (Fed. Cir. 2008); *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1324 (Fed. Cir. 2004). "[S]econdary considerations of nonobviousness . . . simply cannot overcome a strong prima facie case of obviousness." *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1246 (Fed. Cir. 2016) (where "the inventions represented no more than 'the predictable use of prior art elements according to their established functions' . . . the secondary considerations are inadequate to establish nonobviousness as a matter of law.").

- 42. The patentee must also show that any secondary consideration has a nexus to the claimed invention in order for the evidence of secondary considerations to be given substantial weight. See Prometheus Labs., Inc. v. Roxane Laboratories, Inc., 805 F.3d 1092, 1101-02 (Fed. Cir. 2015); see also Simmons Fastener Corp. v. Ill. Tool Works, Inc., 739 F.2d 1573, 1575 (Fed. Cir. 1984); Fox Factory, Inc. v. SRAM, LLC, 944 F.3d 1366, 1373 (Fed. Cir. 2019) ("[T]here must be 'a legally and factually sufficient connection' between the evidence and the patented invention.") (quoting Henny Penny Corp. v. Frymaster LLC, 938 F.3d 1324, 1332 (Fed. Cir. 2019)); Ferring Pharms. Inc. v. Fresenius Kabi USA, LLC, 645 F. Supp. 3d 335, 387 (D. Del. 2022) (finding no nexus when the patentee "ma[de] no effort to tie the asserted secondary considerations to the claimed [invention]); Cubist Pharms., Inc. v. Hospira, Inc., 75 F. Supp. 3d 641, 667 (D. Del. 2014), aff'd, 805 F.3d 1112 (Fed. Cir. 2015). "The patentee bears the burden of showing that a nexus exists." Fox Factory, 944 F.3d at 1373.
- 43. A "nexus between the merits of the claimed invention and evidence of secondary considerations is required in order for the evidence to be given substantial weight in an obviousness

- decision. . . Put another way, commercial success or other secondary considerations may presumptively be attributed to the patented invention only where the marketed product embodies the claimed features, and is coextensive with them." *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1327-28 (Fed. Cir. 2008) (citations omitted).
- 44. "[T]he law deems evidence of (1) commercial success, and (2) some causal relation or 'nexus' between an invention and commercial success of a product embodying that invention, probative of whether an invention was non-obvious." *AstraZeneca LP v. Breath Ltd.*, 88 F. Supp. 3d 326, 392 (D.N.J. 2015), *aff'd*, 603 F. App'x 999 (Fed. Cir. 2015) (quoting *Merck & Co., Inc. v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1376 (Fed.Cir.2005)). Therefore, "it is important to ensure an adequate nexus to the patented claims." *Id.*
- 45. "The normal desire of scientists or artisans to improve upon what is already generally known" does not amount to unexpected results. *See In re Peterson*, 315 F.3d 1325, 1330-31, (Fed. Cir. 2003). "Unexpected results must be established by factual evidence. Mere argument or conclusory statements in the specification does not suffice." *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984).
- 46. Failure of others is not indicative of nonobviousness where the alleged failure is due to issues unrelated to the claimed invention. See Boston Sci. SciMed, Inc. v. Cordis Corp., 554 F.3d 982, 991-92 (Fed. Cir. 2009); Geo M. Martin Co. v. Alliance Mach. Sys. Int'l, LLC, 618 F.3d 1294, 1305 (Fed. Cir. 2010) ("The Trust's evidence of failure of others is similarly insufficient. While a jury might have credited the Trust's evidence that other machines, such as the Visy machine, did not work as well as the Quik–Break, everything indicates that the Quik–Break's superiority was due to its enhanced throughput over and above the claimed ability to handle a 'plurality of logs.'"). In other words, "[e]vidence of the long-felt need factor must squarely address

the need satisfied by the asserted claims themselves." *AstraZeneca v. Breath*, 88 F. Supp. 3d at 387.

- 47. "[L]ong-felt need involves a showing of 'an articulated identified problem and evidence of efforts to solve that problem." *In re Kavanagh*, 851 F. App'x 1028, 1035 (Fed. Cir. 2021) (quoting *Tex. Instruments Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 1178 (Fed. Cir. 1993)).
- 48. "[C]opying," in the context of secondary considerations of nonobviousness, applies only "if the alleged copyist has in fact copied the patented product rather than independently arrived at a similar design." *Medtronic, Inc. v. Teleflex Innovations S.a.r.l.*, 70 F.4th 1331, 1339-40 (Fed. Cir. 2023). "Copying requires duplication of features of the patentee's work based on access to that work, lest all infringement be mistakenly treated as copying." *Institut Pasteur & Université Pierre Et Marie Curie v. Focarino*, 738 F.3d 1337, 1347-48 (Fed. Cir. 2013); *accord Boston Sci. SciMed, Inc. v. Iancu*, 811 F. App'x 618, 628 (Fed. Cir. 2020). "Our case law holds that copying requires evidence of efforts to replicate a specific product, which may be demonstrated through internal company documents, direct evidence such as disassembling a patented prototype, photographing its features, and using the photograph as a blueprint to build a replica, or access to the patented product combined with substantial similarity to the patented product." *Wyers*, 616 F.3d at 1246.
- 49. A revenue number by itself is generally not indicative of nonobviousness; that number must be analyzed in the context of the overall market. *See In re Baxter Travenol Lab'ys*, 952 F.2d 388, 392 (Fed. Cir. 1991) (rejecting evidence of commercial success where "[n]o market share information was provided"); *accord In re Huang*, 100 F.3d 135, 140 (Fed. Cir. 1996).
  - 50. "[Secondary] considerations are relevant only in a close case where all other proof

leaves the question of invention in doubt." *Dow Chem. Co. v. Halliburton Oil Well Cementing Co.*, 324 U.S. 320, 330, 65 S. Ct. 647, 651, 89 L. Ed. 973 (1945). "[S]econdary considerations of nonobviousness . . . simply cannot overcome a strong prima facie case of obviousness." *Wyers*, 616 F.3d at 1246; *see also Genentech, Inc. v. Sandoz Inc.*, 55 F.4th 1368, 1378 (Fed. Cir. 2022) (quoting *W. Union Co. v. MoneyGram Payment Sys., Inc.*, 626 F.3d 1361, 1371 (Fed. Cir. 2010)); *Leapfrog*, 485 F.3d at 1162.

## 4. Lack of Written Description Under § 112

- 51. A patent may be held invalid if the claims are not supported by written description. "The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention." 35 U.S.C. § 112.
- 52. The purpose of the written description requirement is to "ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor's contribution to the field of art as described in the patent specification." *Atl. Rsch. Mktg. Sys., Inc. v. Troy*, 659 F.3d 1345, 1354 (Fed. Cir. 2011) (internal citations and quotations omitted). "The essence of the written description requirement is that a patent applicant, as part of the bargain with the public, must describe his or her invention so that the public will know what it is and that he or she has truly made the claimed invention." *AbbVie Deutschland GmbH & Co., KG v. Janssen Biotech, Inc.*, 759 F.3d 1285, 1298 (Fed. Cir. 2014) (citing *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 736 (2002)). "[T]he hallmark of written description is disclosure." *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). The written

description requirement is satisfied only when the specification "clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed.'... In other words, the test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Id.* at 1351-52. This is because patents are awarded "to those who actually perform the difficult work of 'invention'... and disclose the fruits of that effort to the public." *Id.* at 1353-54; *see also Boston Sci. Corp. v. Johnson & Johnson*, 647 F.3d 1353, 1364 (Fed. Cir. 2011).

- 53. In determining whether a specification contains an adequate written description, "one must make an 'objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art." *Boston Sci. Corp. v. Johnson & Johnson*, 647 F.3d at 1366 (citing *Ariad Pharms.*, 598 F.3d at 1351). This inquiry is a question of fact. *Ariad Pharms.*, 598 F.3d at 1351-52.
- 54. A claim is invalid for lack of written description if "original disclosure is completely lacking in any description of an embodiment" as recited in the claim. *Turbocare Div.* of Demag Delaval Turbomachinery Corp. v. Gen. Elec. Co., 264 F.3d 1111, 1119 (Fed. Cir. 2001).
- 55. "A 'mere wish or plan' for obtaining the claimed invention is not adequate written description." *Centocor Ortho Biotech, Inc. v. Abbott Labs.*, 636 F.3d 1341, 1348 (Fed. Cir. 2011). "[An] adequate written description requires a precise definition, such as by structure, formula, chemical name, physical properties, or other properties, of species falling within the genus sufficient to distinguish the genus from other materials." *Ariad Pharms.*, 598 F.3d at 1350. "[M]erely drawing a fence around the outer limits of a purported genus is not an adequate substitute for describing a variety of materials constituting the genus and showing that one has invented a genus and not just a species." *Id.*

56. "While the written description requirement does not require that the specification recite the claimed invention in any particular way, pointing to an 'amalgam of disclosures' from which an artisan could have created the claimed invention does not satisfy this requirement." Flash-Control, LLC v. Intel Corp., No. 2020-2141, 2021 WL 2944592, at \*3 (Fed. Cir. July 14, 2021); see also Billups-Rothenberg, Inc. v. Assoc. Reg'l & Univ. Pathologists, Inc., 642 F.3d 1031, 1037 (Fed. Cir. 2011) (affirming summary judgment of lack of written description, relying in part on absence of "even a single species that satisfies the claims").

## 5. Patent Ineligibility Under § 101

- 57. "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101. The Supreme Court recognizes three exceptions to the subject matter eligibility requirements of section 101: laws of nature, physical phenomena, and abstract ideas. *See Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 218 (2014).
- 58. Patent eligibility under § 101 is a question of law, which may involve underlying facts. *See Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018).
- 59. The Supreme Court in *Alice* set forth the now-familiar two-step test "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 573 U.S. at 217-218.
- 60. At *Alice* step one, the Court must determine whether the claims at issue are directed to an abstract idea. *See Alice*, 573 U.S. at 217. Step one involves looking at the focus of the claim or their character as a whole. *See Elec. Power Grp., LLC v. Alstom*

S.A., 830 F.3d 1350, 1353 (Fed. Cir. 2016); Affinity Labs of Texas, LLC v. DIRECTV, LLC, 838 F.3d 1253, 1257 (Fed. Cir. 2016); see also Jedi Techs., Inc. v. Spark Networks, Inc., C.A. No. 1:16-1055-GMS, 2017 WL 3315279, at \*8 (D. Del. Aug. 3, 2017) ("A bedrock principle under Alice step one involves distilling claims to their basic concepts[.]"); IPLearn-Focus, LLC v. Microsoft Corp., No. 14-cv-00151-JD, 2015 WL 4192092, at \*4 (N.D. Cal. July 10, 2015), aff'd, 667 F. App'x 773 (Fed. Cir. 2016) (Alice step one "took a big-picture view" and did "not fixate on the specifics of the claim language."). A court may treat a claim as representative and conduct the Alice analysis on the representative claim when the claims are substantially similar and linked to the same abstract idea. See Content Extraction & Transmission LLC v. Wells Fargo Bank, N.A., 776 F.3d 1343, 1349 (Fed. Cir. 2014); see also Berkheimer, 881 F.3d at 1365 (treating claim as representative when there was no "meaningful argument for the distinctive significance of any claim limitations not found in the representative claim"). Claims adding particularity may not alter the "heart" of the claims. See Ultramercial, Inc. v. Hulu, LLC, 772 F.3d 709, 714 (Fed. Cir. 2014).

61. Courts utilize a variety of techniques to address the inquiry at step one. In one approach, courts compare the claims at issue to those already found to be abstract in previous cases. *See Int'l Bus. Machines Corp. v. Zynga Inc.*, 642 F. Supp. 3d 481, 491 (D. Del. 2022). In *Two-Way Media*, claims reciting methods for "transmitting message packets over a communications network[,]" comprising the steps of "converting" the streams "of audio and/or visual information into" streams of "digital packets[,]" "routing [ea]ch stream[,]" "controlling the routing of the stream of packets in response to selection signals[,]" and "monitoring the reception[,]" including records about the times a user

starts and stops receiving the packets, were found abstract under step one. *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329, 1334-1338 (Fed. Cir. 2017); *see also Secured Mail Sols. LLC v. Universal Wilde, Inc.*, 873 F.3d 905, 912 (Fed. Cir. 2017) (holding "bi-directional communication" is not inventive); *Affinity Labs*, 838 F.3d at 1261 (finding as abstract patent directed at the conveyance and manipulation of information using wireless communication and computer technology); *Chamberlain Grp., Inc. v. Techtronic Indus. Co.*, 935 F.3d 1341, 1346 (Fed. Cir. 2019) ("Wirelessly communicating status information about a system is similar to abstract ideas we have found in our previous cases."); *Twilio, Inc. v. TeleSign Corp.*, 249 F. Supp. 3d 1123, 1143 (N.D. Cal. 2017) (finding claims focusing on "selecting the best message routing option based on separately-transmitted feedback" directed to an abstract idea); *Berkheimer*, 881 F.3d at 1366-70 (the parsing of data "[did] not demonstrate non-abstractness").

- 62. Courts may also consider whether the claims have an analogy in a non-computer context, such that they cover a long prevalent fundamental practice. *See Intell. Ventures I LLC v. Cap. One Bank (USA)*, 792 F.3d 1363, 1369-70 (Fed. Cir. 2015) ("*Cap. One Bank*").
- 63. When computer-implemented claims are at issue, "courts have considered whether the claims purport to 'improve the functioning of the computer itself,' . . . which may suggest that the claims are not abstract, or instead whether 'computers are invoked merely as a tool' to carry out an abstract process." *Twilio*, 249 F. Supp. 3d at 1138 (citing *Alice*, 573 U.S. at 225); *see also Cap. One Bank*, 792 F.3d at 1370-1372.
- 64. At *Alice* step two, the Court determines whether the claim limitations *other than* the invention's use of the ineligible concept to which it is directed constitute

an inventive concept sufficient to transform the nature of the claim into a patent-eligible application. See Alice, 573 U.S. at 217; see also BSG Tech LLC v. Buyseasons, Inc., 899 F.3d 1281, 1290 (Fed. Cir. 2018). "[T]he abstract idea cannot supply the inventive concept." Karamelion LLC v. Intermatic Inc., No. 1:20-cv-0639, 2020 WL 6545058, at \*7 (N.D. Ill. Nov. 6, 2020); see also Int'l Bus. Machines Corp. v. Zillow Grp., Inc., 50 F.4th 1371, 1379 (Fed. Cir. 2022) ("Zillow"); Trading Techs. Int'l, Inc. v. IBG LLC, 921 F.3d 1084, 1093 (Fed. Cir. 2019); Synopsys, Inc. v. Mentor Graphics Corp., 839 F.3d 1138, 1151 (Fed. Cir. 2016) ("[A] claim for a new abstract idea is still an abstract idea."). Additionally, the inventive concept must be recited in the claims. See, e.g., Intell. Ventures I LLC v. Symantec Corp., 838 F.3d 1307, 1322 (Fed. Cir. 2016) (district court "erred in relying on technological details set forth in the patent's specification and not set forth in the claims to find an inventive concept") ("Symantec"); see also Two-Way Media, 874 F.3d at 1338; Ericsson Inc. v. TCL Commc'n Tech. Holdings Ltd., 955 F.3d 1317, 1329 (Fed. Cir. 2020).

65. To satisfy the inventive concept requirement, a computer-implemented invention must claim "more than well-understood, routine, conventional activity" previously known. *WiTricity Corp. v. Momentum Dynamics Corp.*, 563 F. Supp. 3d 309, 323 (D. Del. 2021). By at least January 2008, transceivers, data control units, and wide area networks were found by one court to be "nothing more than generic networking equipment used to connect devices to a server (to enable sending and receiving communications over a network)." *ChargePoint, Inc. v. SemaConnect, Inc.*, No. MJG-17-3717, 2018 WL 1471685, at \*8-11 (D. Md. Mar. 23, 2018), *aff'd*, 920 F.3d 759 (Fed. Cir. 2019).

- 66. "[M]ere automation of manual processes using generic computers does not constitute a patentable improvement in computer technology." *Credit Acceptance Corp. v. Westlake Servs.*, 859 F.3d 1044, 1055 (Fed. Cir. 2017).
- 67. Merely stating an improved result attributed to the abstract idea is insufficient. See Redwood Techs., LLC v. NETGEAR, Inc., C.A. No. 22-1271-GBW, 2024 WL 3202395, at \*4 (D. Del. June 27, 2024); Epic IP LLC v. Backblaze, Inc., 351 F. Supp. 3d 733, 741 (D. Del 2018). The patent "must recite a specific means or method that solves a problem in an existing technological process." Koninklijke KPN N.V. v. Gemalto M2M GmbH, 942 F.3d 1143, 1150 (Fed. Cir. 2019); see also Apple, Inc. v. Ameranth, Inc., 842 F.3d 1229, 1241 (Fed. Cir. 2016). The claims must sufficiently describe how to achieve the claimed functional results in a non-abstract way. See Two-Way Media, 874 F.3d at 1337; see also Berkheimer, 881 F.3d at 1366-1370; Zillow, 50 F.4th at 1378.
- 68. Claims that recite "black box" components that replace human operators in unspecified manners are abstract. *See Ficep Corp. v. Peddinghaus Corp.*, 587 F. Supp. 3d 115, 124 (D. Del. 2022) (citing *Dropbox, Inc. v. Synchronoss Techs., Inc.*, 815 F. App'x 529, 533 (Fed. Cir. 2020)).
- 69. "Federal Circuit precedent[] explains it is erroneous to draw [a § 101] conclusion from the USPTO's approval. . . . Satisfying the requirements of novelty and non-obviousness does not imply eligibility under § 101, . . . because what may be novel and non-obvious may still be abstract." *Total Quality Sys., Inc. v. Universal Synaptics Corp.*, No. 1:22-cv-00167-RJS-DAO, 2024 WL 2396979, at \*10 (D. Utah May 23, 2024).

## V. DAMAGES

#### A. Issues of Law

- 70. Whether TrackThings has proven, by a preponderance of the evidence, reasonable royalty damages and the amount of any such damages, including the per-unit royalty rate and number of infringing sales, that would compensate TrackThings for infringement of any asserted claims of the '442 patent found infringed and not invalid.
- 71. Whether TrackThings has proven, by a preponderance of the evidence, that it is entitled to any ongoing royalty.
- 72. Whether TrackThings has proven that it is entitled to an award of prejudgment and post-judgment interest, and the amount of such interest.
  - 73. Whether TrackThings is entitled to enhanced damages pursuant to 35 U.S.C. § 284.
- 74. NETGEAR additionally notes that it also has pending multiple *Daubert* motions addressed to TrackThings' damages expert, Mr. Holzen. NETGEAR incorporates those *Daubert* motions here by reference. (*See* Dkt. 245, 373-375.)

## B. Legal Authority

## 1. Damages Generally and Burden of Proof

- 75. "Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court." 35 U.S.C. § 284.
- 76. Section 284 is directed to "damages adequate to compensate for the infringement." 35 U.S.C. § 284. Depending on the circumstances of the case, compensatory damages may take the form of (1) lost profits, (2) an established royalty, or (3) a reasonable royalty. See Smithkline Diagnostics, Inc. v. Helena Lab'ys Corp., 926

F.2d 1161, 1163, 1167, & n.5; *Hanson v. Alpine Valley Ski Area, Inc.*, 718 F.2d 1075, 1078 (Fed. Cir. 1983). The infringer's profits are <u>not</u> a measure of damages. *See Water Techs. Corp. v. Calco, Ltd.*, 850 F.2d 660, 673 (Fed. Cir. 1988); *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 505-506 (1964); *see also Contour IP Holding, LLC v. GoPro, Inc.*, No. 3:17-CV-04738-WHO, 2020 WL 5106845, at \*14 (N.D. Cal. Aug. 31, 2020).

- 77. Once a patent holder is compensated via an award of patent damages, no additional recovery may be had from the paying infringer or any other direct or indirect infringer. *See Minco, Inc. v. Combustion Engineering, Inc.*, 95 F.3d 1109, 1121 (Fed. Cir. 1996). *See Glenayre Elecs., Inc. v. Jackson*, 443 F.3d 851, 872 (Fed. Cir. 2006). This is because "in most cases damages assessed for indirect infringement will be equal to damages assessed for the underlying direct infringement." *Id.* at 859.
- TrackThings has the burden of proving each element of its damages case, including the amount of damages, by a preponderance of the evidence. The burden of proving damages falls on the patentee and the patentee must show his damages by evidence. *See Promega Corp. v. Life Techs. Corp.*, 875 F.3d 651, 660 (Fed. Cir. 2017). Damages "must not be left to conjecture by the jury. They must be proved, and not guessed at." *Id.* "[T]here can be an award of no damages where 'none were proven." *TecSec, Inc. v. Adobe Inc.*, 978 F.3d 1278, 1291 (Fed. Cir. 2020).
- 79. "The court may receive expert testimony as an aid to the determination of damages or of what royalty would be reasonable under the circumstances." 35 U.S.C. § 284. "A damages theory must be based on 'sound economic and factual predicates." *LaserDynamics, Inc. v. Quanta Comput., Inc.*, 694 F.3d 51, 67 (Fed. Cir. 2012) (quoting

Riles v. Shell Expl. & Prod. Co., 298 F.3d 1302, 1311 (Fed. Cir. 2002)). "At all times, the damages inquiry must concentrate on compensation for the economic harm caused by infringement of the claimed invention. . . . Any evidence unrelated to the claimed invention does not support compensation for infringement but punishes beyond the reach of the statute." ResQNet, Inc. v. Lansa, Inc., 594 F.3d 860, 869 (Fed. Cir. 2010) (internal citation omitted).

80. The Federal Rules of Civil Procedure require disclosure of "each category of damages claimed by the disclosing party—who must also make available for inspection and copying as under Rule 34 the documents or other evidentiary material, unless privileged or protected from disclosure, on which each computation is based, including materials bearing on the nature and extent of injuries suffered[.]" Fed. R. Civ. P. 26(a)(1)(A)(iii). Late disclosure theories of damages may be struck. See NexStep, Inc. v. Comcast Cable Commc'ns, LLC, No. CV 19-1031-RGA, 2021 WL 5356293, at \*1, 3 (D. Del. Nov. 17, 2021) (excluding late-disclosed, new theory of damages that plaintiff proposed after court granted motion to exclude opinion of plaintiff's damage expert).

# 2. Calculating Damages in Cases of Inducement

81. In order to recover damages for induced infringement, TrackThings must either prove that the accused product necessarily infringes the asserted claims or prove acts of direct infringement by others that were induced by NETGEAR. "A defendant's liability for indirect infringement must relate to the identified instances of direct infringement. Plaintiffs who identify *individual* acts of direct infringement must restrict their theories of vicarious liability—and tie their claims for damages or injunctive relief—to *the identified act*. . . Plaintiffs who identify an entire category of infringers

(e.g., the defendant's customers) may cast their theories of vicarious liability more broadly, and may consequently seek damages or injunctions across the entire category." *Dynacore Holdings Corp. v. U.S. Philips Corp.*, 363 F.3d 1263, 1274 (Fed. Cir. 2004).

## 3. Reasonable Royalty

- A royalty is a payment made to a patent holder in exchange for a license that provides the right to make, use, or sell the claimed invention. A reasonable royalty is defined as the amount that someone wanting to make, use, or sell the patented invention would have agreed to pay to the patent owner and the patent owner would have accepted just before infringement began. *See Virnetx, Inc. v. Cisco Sys., Inc.*, 767 F.3d 1308, 1326 (Fed. Cir. 2014) ("The most common method for determining a reasonable royalty is the hypothetical negotiation approach, which 'attempts to ascertain the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before infringement began.""); *see also Aqua Shield v. Inter Pool Cover Team*, 774 F.3d 766, 770 (Fed. Cir. 2014) (explaining that a reasonable royalty is the amount that a person, desiring to manufacture, use, or sell a patented article would be willing to pay as a royalty and yet be able to make, use, or sell the patented article at a reasonable profit).
- 83. A royalty can be calculated in several different ways. Some of the relevant factors are: the value that the claimed invention contributes to the accused product; the value that factors other than the claimed invention contribute to the accused product; and comparable license agreements. *See Virnetx*, 767 F.3d at 1326, 1330; *see also Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970).
  - 84. A reasonable royalty can be paid either in the form of a one-time lump

sum payment or as a "running royalty" (sometimes referred to as a "continuing" or "ongoing" royalty). Choice of lump sum versus running royalty must be supported by the facts. See Lighting Def. Grp. LLC v. Shanghai Sansi Elec. Eng'g Co. Ltd., No. 2:22-CV-01476-PHX-SMB, 2024 WL 4837011 (D. Ariz. Nov. 20, 2024) (excluding running royalty opinion as "unreliable" where the evidence overwhelmingly showed a preference for lump sum). Both methods are designed to compensate the patent holder based on the accused infringer's use of the patented technology. A lump sum payment is equal to an amount that the alleged infringer would have paid at the time of a hypothetical negotiation for a license covering all sales of the licensed product, both past and future. A running royalty is paid out over time. "In a standard running royalty license, the amount of money payable by the licensee to the patentee is tied directly to how often the licensed invention is later used or incorporated into products by the licensee." Lucent Techs., Inc. v. Gateway, Inc., 580 F.3d 1301, 1326 (Fed. Cir. 2009). "A per-unit running royalty is paid based on the number of units ultimately sold (or made, etc.), which is of course directly related to product revenues. As more units are sold, more revenue is earned and more royalties are paid." *Id.* at 1330. A running royalty can be calculated, for example, by multiplying a royalty base (number of accused products sold) by a royalty rate (amount per unit).

85. A reasonable royalty may be based on a hypothetical license negotiation between the patent owner and accused infringer that "attempts to ascertain the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before infringement began." *Lucent Techs.*, 580 F.3d 1301, 1324 (Fed. Cir. 2009). The patent is assumed valid and infringed and it is assumed that both parties

were willing to enter into an agreement. *See id.* at 1325. "[P]arties in a hypothetical negotiation are presumed to have perfect knowledge of all facts and circumstances, some of which were unknown during the actual patent negotiations and acquisition." *Intell. Ventures I LLC v. Check Point Software, et al.*, C.A. Nos. 10-1067-LPS, 12-1581-LPS, at \*11 (D. Del. Mar. 31, 2014) (Mem. Op.) (citing *Mobile Oil Corp. v. Amoco Chem. Corp.*, 915 F. Supp. 1333, 1353 (D. Del. 1994)).

86. Damages are based on what the parties to the hypothetical license negotiations would have agreed upon at the time of the negotiation. See Virnetx, 767 F.3d at 1326 ("The most common method for determining a reasonable royalty is the hypothetical negotiation approach, which 'attempts to ascertain the royalty upon which the parties would have agreed had they successfully negotiated an agreement just before infringement began.""). Evidence relevant to the negotiation is not necessarily limited to facts that occurred on or before the date of the hypothetical negotiation. "[I]n discussing the hypothetical negotiations methodology, [the Federal Circuit] stated that '[t]he methodology encompasses ... flexibility because it speaks of negotiations as of the time infringement began, yet permits and often requires a court to look to events and facts that occurred thereafter and that could not have been known to or predicted by the hypothetical negotiators." Studiengesellschaft Kohle, m.b.H. v. Dart Indus., Inc., 862 F.2d 1564, 1571-72 (Fed. Cir. 1988). "The court went on to hold that, under the circumstances of th[e]<sup>3</sup> case, it would be appropriate for the district court on remand to consider the infringer's actual profits in calculating a reasonable royalty. Similarly, it was not error for [the judge] to consider the [] settlement in th[e] case, even though it was

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entered into in 1974 and the effective rate [] paid under the combined provisions of the settlement could not be determined until the [asserted] patent expired in 1981." *Id*.

87. Evidence dated post-infringement may also be properly considered because such information provides "a legitimate aid to the appraisal of the value of the patent" at the time of the hypothetical negotiation. Sinclair Refining Co. v. Jenkins Petroleum Process Co., 289 U.S. 689, 697–98 (1933) ("[A] different situation is presented if years have gone by before the evidence is offered. Experience is then available to correct uncertain prophecy. Here is a book of wisdom that courts may not neglect. We find no rule of law that sets a clasp upon its pages, and forbids us to look within."); see also Fromson v. W. Litho Plate & Supply Co., 853 F.2d 1568, 1575 (Fed. Cir. 1988) (the hypothetical negotiation methodology "permits and often requires a court to look to events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators"), overruled on other grounds by Knorrr-Bremse Systeme Fuer Nutzfarhrzeuge GmbH v. Dana Corp., 383 F.3d 1337, 1344 (Fed. Cir. 2004); Lucent Techs., 580 F.3d at 1333-34 ("[O]ur case law affirms the availability of post-infringement evidence as probative in certain circumstances."); ResONet.com, 594 F.3d at 872 (instructing that "the district court may also consider the panoply of 'events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators"); Honeywell Int'l, Inc. v. Hamilton Sundstrand Corp., 378 F. Supp. 2d 459, 465 (D. Del. 2005) ("It is axiomatic that 'the use made' will not be known until after infringement. And since the date of the hypothetical negotiation is 'before the infringing activity began,' . . . information not available as of [the] date must necessarily be considered by the factfinder.") (emphasis removed).

- 88. In deciding the amount of a reasonable royalty that would have resulted from the hypothetical negotiation, the following factors may be considered:
  - (1) The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.
  - (2) The rates paid by the licensee for the use of other patents comparable to the patent in suit.
  - (3) The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.
  - (4) The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly.
  - (5) The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter.
  - (6) The effect of selling the patented specialty in promoting sales of other products of the licensee; that existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales.
  - (7) The duration of the patent and the term of the license.
  - (8) The established profitability of the product made under the patent; its commercial success; and its current popularity.

- (9) The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.
- (10) The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention.
- (11) The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use.
- (12) The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions.
- (13) The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.
- (14) The opinion testimony of qualified experts.
- (15) The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee— who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention— would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was

willing to grant a license.

See Georgia-Pacific, 318 F. Supp. at 1120.

89. As part of the analysis under Georgia-Pacific factors 1 and 2, the factfinder may consider, respectively, prior licenses for the use of the patent in suit, or prior licenses for the use of "other patents comparable to the patent in suit." See Georgia-Pacific, 318 F. Supp. at 1120. The amount of weight given to any particular license depends on the degree of comparability with the terms of the hypothetical license. See ResONet.com, 594 F.3d at 869-70; see also Lucent Techs., 580 F.3d at 1325-26; Ericsson, Inc. v. D-Link Sys., Inc., 773 F.3d 1201, 1227 (Fed. Cir. 2014) ("Prior licenses . . . are almost never perfectly analogous to the infringement action. . . . Testimony relying on licenses must account for such distinguishing facts when invoking them to value the patented invention."). A license agreement need not be perfectly comparable to a hypothetical license that would be negotiated between the patentee and accused infringer. See Ericsson v. D-Link, 773 F.3d at 1227 ("Prior licenses, however, are almost never perfectly analogous to the infringement action."). While the parties to the hypothetical negotiation assume a patent is valid and infringed, an agreement may be comparable even if there has been no determination or assumption by the parties to the agreement that the patent is valid and infringed. Settlement agreements may be relevant—and at times even the most reliable licenses in the record. See Elbit Sys. Land & C4I Ltd. v. Hughes Network Sys., LLC, 927 F.3d 1292, 1299-301 (Fed. Cir. 2019) (citing Prism Techs. LLC v. Sprint Spectrum L.P., 849 F.3d 1360, 1369 (Fed. Cir. 2017)); ResQNet.com, 594 F.3d at 872 ("This court observes as well that the most reliable license in this record arose out of litigation."); Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., 853 F.3d 1370, 1381

(Fed. Cir. 2017) ("We hold that the district court did not abuse its discretion in allowing Mr. Weinstein to discuss the Blackberry agreement, as our cases allow relevant settlement agreements to be considered in determining a reasonable royalty rate."); *Volumetrics Med. Imaging, LLC v. Toshiba Am. Med. Sys., Inc.*, No. 1:05CV955, 2011 WL 2470460, at \*13 (M.D.N.C. June 20, 2011). Additionally, a patentee's offer to license its patent may provide relevant evidence in assessing a hypothetical negotiation between the patentee and the accused infringer. *See Atl. Thermoplastics Co., Inc. v. Faytex Corp.*, 5 F.3d 1477, 1482 (Fed. Cir. 1993); *see also AVM Techs., LLC v. Intel Corp.*, No. 15–33–RGA, 2017 WL 1787562, \*2 (D. Del. May 1, 2017).

"A patentee is only entitled to a reasonable royalty attributable to the infringing features. The patentee must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features." *Power Integrations, Inc. v. Fairchild Semiconductor International, Inc.*, 904 F.3d 965, 977 (Fed. Cir. 2018) (quoting *Ericsson v. D-Link*, 773 F.3d at 1226) (internal quotations removed); *see Garretson v. Clark*, 111 U.S. 120, 121 (1884); *Beatrice Foods v. New Eng. Printing & Lithographing*, 899 F.2d 1171, 1176 (Fed. Cir. 1990). A patentee may calculate a royalty as a percentage of the entire market value of the accused product only if the patented feature creates the basis for customer demand, i.e., that it creates the demand for the product "in the first place" rather than just enabling an important, or even essential, feature or characteristic. *See LaserDynamics*, 694 F.3d 67–68; *Uniloc USA, Inc. v. Microsoft Corp.*, 632 F.3d 1292, 1318 (Fed. Cir. 2011). "The law requires patentees to apportion the royalty down to a reasonable estimate of the value of its claimed technology, or else establish that its patented technology drove

demand for the entire product." *VirnetX, Inc.*, 767 F.3d at 1329; *see also, Bayer HealthCare LLC v. Baxalta Inc.*, No. 16-CV-1122-RGA, 2019 WL 330149, at \*8 (D. Del. Jan. 25, 2019) (citing *Ericsson v. D-Link*, 773 F.3d at 1226–27 (instructing that royalties must be apportioned between the infringing and non-infringing features of the accused product)); *CSIRO v. Cisco Sys., Inc.*, 809 F.3d 1295, 1304–05 (Fed. Cir. 2015).

- 91. Conventional components are also to be apportioned out. *See Exmark Mfg. v. Briggs & Stratton Power Prods. Grp.*, 879 F.3d 1332, 1348 (Fed. Cir. 2018); *GPNE Corp. v. Apple Inc.*, No. 12–CV–02885–LHK, 2014 WL 1494247, at \*11-13 (N.D. Cal. Apr. 16, 2014).
- 92. In determining the appropriate royalty base and the appropriate royalty rate, "the ultimate combination of [both the] royalty base and royalty rate must reflect the value attributable to the infringing features of the product [i.e., the patented technology alone], and no more." Ericsson v. D-Link, 773 F.3d at 1226; Finjan, Inc. v. Blue Coat Sys., Inc., 879 F.3d 1299, 1309-10 (Fed. Cir. 2018) ("[T]he [] combination of royalty base and royalty rate must reflect the value attributable to the infringing features . . ., and no more." . . . [P]atentee must 'give evidence tending to separate or apportion the [infringer]'s profits and the patentee's damages between the patented feature and the unpatented features. . . . "). It is not sufficient to use a royalty base that is too high and then adjust the damages downward by applying a lower royalty rate. See LaserDynamics, 694 F.3d at 67-68 (barring the use of too high a royalty base—even if mathematically offset by a "low enough royalty rate"—because such a base "carries a considerable risk" of misleading a jury into overcompensating, stating that such a base "cannot help but skew the damages horizon for the jury" and "make a patentee's

proffered damages amount appear modest by comparison"). When the entire value of the accused product is not attributable to the patented feature, "courts must insist on a [] realistic starting point for the royalty calculations by juries—often, the smallest salable unit and, at times, even less." *Ericsson v. D-Link*, 773 F.3d at 1227; *see also GPNE*, 2014 WL 1494247, at \*11-13.

93. "[A] party may ... estimate the value of the benefit provided by the infringed features by comparing the accused product to non-infringing alternatives." *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1315 (Fed. Cir. 2014), overruled on other grounds by *Williamson v. Citrix Online, LLC*, 792 F.3d 1339 (Fed. Cir. 2015).

### 4. Costs, Prejudgment, and Postjudgment Interest

- 94. Section 284 allows for "interest and costs as fixed by the court."
- 95. As with the other aspects of TrackThings' damages case, TrackThings has the burden of proving the amount of pre- and post-judgment interest it believes it would be entitled. *Promega Corp.*, 875 F.3d at 660.
- 96. Under 28 U.S.C. § 1961(a), "[i]nterest shall be allowed on any money judgment in a civil case recovered in a district court." Upon a finding of infringement, prejudgment interest may be awarded "where necessary to afford the plaintiff full compensation for the infringement." *Schwendimann v. Arkwright Advanced Coating, Inc.*, 959 F.3d 1065, 1076 (Fed. Cir. 2020) (citations omitted). The rate of prejudgment interest and whether it should be compounded or not are matters for the Court's discretion. *See Nickson Indus., Inc. v. Rol Mfg. Co.*, 847 F.2d 795, 800 (Fed. Cir. 1988); *Bio-Rad Laby's., Inc. v. Nicolet Instrument Corp.*, 807 F.2d 964, 969 (Fed. Cir. 1986). Prejudgment interest must be based "only on the compensatory portion of the damages

award," not on any enhanced damages awarded. Beatrice Foods, 923 F.2d at 1580.

- 97. Delay in filing suit that is prejudicial to NETGEAR prohibits an award of prejudgement interest. *See Crystal Semiconductor Corp. v. TriTech Microelecs. Intern.*, 246 F.3d 1336, 1362 (Fed. Cir. 2002) (denying prejudgment interest because of "two year delay in initiating the present suit").
- 98. "The 'date of entry of judgment' demarcates the boundary between preand postjudgment interest." *Transmatic, Inc. v. Gulton Indus.*, 180 F.3d 1343, 1347 (Fed. Cir. 1999) (internal quotations and citations omitted). Postjudgment interest accrues "from the date of the entry of judgment" and is "computed daily to the date of payment." *Loughman v. Consol-Pennsylvania Coal Co.*, 6 F.3d 88, 97 (3d Cir. 1993); 28 U.S.C. §1961(b). Regional circuit law is applied when determining postjudgment interest. *See Taltech Ltd. v. Esquel Enters. Ltd.*, 604 F.3d 1324, 1335 (Fed. Cir. 2010).
- Ourt, the prevailing party shall be entitled to costs. The party shall, within 14 days after the time for appeal has expired or within 14 days after the issuance of the mandate of the appellate court, file a bill of costs. Failure to comply with the time limitations of this Rule shall constitute a waiver of costs, unless the Court otherwise orders or counsel are able to agree on the payment of costs. In the latter case, no bill of costs need be filed."

  D. Del. Local Rule 54.1(a)(1). "Costs shall be taxed in conformity with the provisions of 28 U.S.C. §§1920, 1921, and 1923, and such other provisions of law as may be applicable and the remaining paragraphs of subpart (b) of this Rule." D. Del. L.R. 54.1(b)(1).

### 5. Enhanced Damages

- 100. Under section 284, "the court may increase the damages up to three times the amount found or assessed." The court has discretion as to whether to award enhanced damages and in what amount. *See Halo Elecs.*, 579 U.S. at 103; *Harris Corp.* v. *Ericsson Inc.*, 417 F.3d 1241, 1259 (Fed. Cir. 2005).
- described in our cases as willful, wanton, malicious, bad-faith, deliberate, consciously wrongful, flagrant, or—indeed—characteristic of a pirate." *Halo Elecs.*, 579 U.S. at 103–04; *see also, Ironburg Inventions Ltd. v. Valve Corp.*, 64 F.4th 1274, 1300-01 (Fed. Cir. 2023) (quoting *Presidio Components, Inc. v. Am. Tech. Ceramics. Corp.*, 875 F.3d 1369, 1382 (Fed. Cir. 2017)). A finding of willful infringement does not compel enhancement of damages. *See Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1581 (Fed. Cir. 1992); *State Industries, Inc. v. Mor-Flo Industries, Inc.*, 948 F.2d 1573, 1577 (Fed. Cir. 1991); *Funai Elec. Co., Ltd. v. Daewoo Electronics Corp.*, 616 F.3d 1357, 1376–77, (Fed. Cir. 2010); *see also* 35 U.S.C. § 284; *Halo Elec.*, 579 U.S. at 104. "In determining whether enhanced damages are appropriate, courts should consider the overall circumstances of the case." *Presidio Components, Inc.*, 875 F.3d at 1382 (citing *Halo Elec.*, 579 U.S. at 106).

### 6. Attorney Fees

102. "The court in exceptional cases may award reasonable attorney fees to the prevailing party." 35 U.S.C. § 285. To be "exceptional," a case must "stand[] out from others with respect to the substantive strength of a party's litigating position (considering both the governing law and the facts of the case) or the unreasonable manner in which the case was litigated." *Octane Fitness, LLC v. ICON Health & Fitness, Inc.*,

572 U.S. 545, 553-55 (2014).

103. "Exceptionality is an element or precondition for the imposition of attorney fees" and exceptional cases are rare. Samsung Electronics Co., Ltd. v. Rambus, Inc., 523 F.3d 1374, 1379–80 (Fed. Cir. 2008); see also Raniere v. Microsoft Corp., 887 F.3d 1298, 1303 (Fed. Cir. 2018). "District courts may determine whether a case is "exceptional" in the case-by-case exercise of their discretion, considering the totality of the circumstances." Octane Fitness, 572 U.S. at 554-55. An award of "attorney fees is not automatic, even for the extraordinary case." Nat'lPresto Indus., Inc. v. West Bend Co., 76 F.3d 1185, 1197 (Fed. Cir. 1996).

## **EXHIBIT 6**

**PARTIES' JOINT EXHIBIT LIST** 

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

JURY TRIAL DEMANDED

**EXHIBIT 6: PARTIES' JOINT EXHIBIT LIST** 

## TrackThings' and NETGEAR's Trial Exhibit List

## **July 18, 2025**

No.	Date	Description	Beg. Bates	End Bates
JX0001	2016-05-03	Certified U.S. Patent No.	TT-N-0001417	TT-N-0001431
		9,332,442		
JX0002	2021-07-14	Certified File History for	TT-N-0001302	TT-N-0001416
		U.S. Patent No. 9,332,442		
JX0003		Curriculum Vitae of Dr.		
		Harry Bims		
JX0004		Curriculum Vitae of Steve		
		Holzen		
JX0005		Curriculum Vitae of Dr.		
		Henry Houh		
JX0006		Curriculum Vitae of Douglas		
		Kidder		

## **EXHIBIT 7**

## TRACKTHINGS' TRIAL EXHIBIT LIST

# Case 1:22-cv-00981-JLH Document 397 Filed 07/29/25 Page 121 of 954 PageID #: \*\*Plaintiff's Trial Exhibit List\*\* Plaintiff's Trial Exhibit List\*\*

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
1	2016-05-03	Patent: U.S. Patent 9,332,442 (Certified)	TT-N-0001417	TT-N-0001431	
2	2017-05-02	Patent: U.S. Patent 9,642,017 (Certified)	TT-N-0001432	TT-N-0001446	
3	2018-10-23	Patent: U.S. Patent 10,107,893 (Certified)	TT-N-0001447	TT-N-0001491	
4		File History: U.S. Patent 9,332,442 (Certified)	TT-N-0001302	TT-N-0001416	
5		File History: U.S. Patent 9,642,017 (Certified)	TT-N-0000899	TT-N-0001301	
6		File History: U.S. Patent 10,107,893 (Certified)	TT-N-0000001	TT-N-0000898	R
7		U.S. Patent No. 10,386,457 (Gabara)	TT-N-0081778	TT-N-0081821	R, U, A, F
8		Physical: Netgear Orbi Whole Home WiFi System Tri-band WiFi (RBK53)	TTN-PHYS-0000001	TTN-PHYS-0000001	A, F
9		Physical: Netgear Business Orbi Pro Router (SRR60)	TTN-PHYS-0000002	TTN-PHYS-0000002	A, F
10		Physical: Netgear Nighthawk, Mesh WiFi 6 System (AX1800)	TTN-PHYS-0000003	TTN-PHYS-0000003	A, F
11		Physical: Netgear Nighthawk, Mesh WiFi 6 System (AX1800)	TTN-PHYS-0000004	TTN-PHYS-0000004	A, F
12		Physical: Netgear Orbi, WiFi 6, Tri-band Mesh WiFi 6 System (AX3000)	TTN-PHYS-0000005	TTN-PHYS-0000005	A, F
13		Physical: Netgear Orbi, WiFi 7, Quad-Band Mesh System (970 Series)	TTN-PHYS-0000007	TTN-PHYS-0000007	A, F
14		Netgear Orbi Whole Home WiFi System Tri-band WiFi (RBK53) TTN-PHYS-0000001	TT-N-0024052	TT-N-0024101	17, 1
15		Netgear Business Orbi Pro Router (SRR60) TTN-PHYS-0000002	TT-N-0024103	TT-N-0024226	
16		Netgear Nighthawk, Mesh WiFi 6 System (AX1800) TTN-PHYS-000003	TT-N-0024227	TT-N-0024282	
17		Netgear Nighthawk, Mesh WiFi 6 System (AX1800) TTN-PHYS-0000004	TT-N-0094902	TT-N-0094936	
18		Netgear Orbi, WiFi 6, Tri-band Mesh WiFi 6 System (AX3000) TTN-PHYS-0000005	TT-N-0094937	TT-N-0094968	
19		Netgear Orbi, WiFi 7, Quad-Band Mesh System (970 Series) TTN-PHYS-0000007	TT-N-0094969	TT-N-0094997	
20	2021-06-21	Complaint for Patent Infringement			
21		Exhibit A - U.S. Patent 9,642,017			C/D
22		Exhibit B - U.S. Patent 9,332,442			C/D
23		Exhibit C - U.S. Patent 10,107,893			C/D
24	2022-08-17	Defendant Netgear Inc.'s Answer to Complaint for Patent Infringement			
25	2022-09-02	Joint Scheduling Order			R
26		Netgear Source Code	NETGEAR-SC-0000001	NETGEAR-SC-0000098	H, F
27		Broadcom Source Code	BROADCOM-TT-0000001	BROADCOM-TT-0000112	H, F
28		Broadcom Source Code	BROADCOM-NETGEAR-0000001	BROADCOM-NETGEAR-0000073	H, F
29		Qualcomm Source Code	Q1TRACKTHINGSNETGEAR981SC0000001	Q1TRACKTHINGSNETGEAR981SC0000355	H, F
30		Qualcomm Source Code	Q2TRACKTHINGSNETGEAR981SC0000001	Q2TRACKTHINGSNETGEAR981SC0000160	Н, F
31	2024-10-28	Defendant Netgear, Inc.'s Motion For Summary Judgment of Non-Infringement			Í
32		Defendant Netgear, Inc.'s Motion For Summary Judgment of Invalidity			
33	2024-10-28	Defendant Netgear, Inc.'s Motion To Exclude Testimony of Plaintiff TrackThings LLC's Damages Expert Stephen A. Holzen			
34	2024-10-28	Defendant Netgear, Inc.'s Brief in Support of Its Motion for Summary Judgment of Non-Infringement			
35	2024-10-28	Defendant Netgear, Inc.'s Brief in Support of Its Motion for Summary Judgment of Invalidity			
36	2024-10-28	Defendant Netgear, Inc.'s Brief in Support of Its Motion to Exclude Testimony of Plaintiff TrackThings LLC's Damages Expert Stephen A. Holzen			
37	2024-10-28	Defendant Netgear, Inc.'s Statement of Material Facts in Support of Its Motion for Summary Judgment of Non- Infringement			

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
38	2024-10-28	Defendant Netgear, Inc.'s Statement of Material Facts in Support of Its Motion for Summary Judgment of Invalidity	(btg)	(Citu)	OBJECTIONS
36	2024-10-20	Defendant Neegear, me. 3 Statement of Material Laces in Support of its Motion for Summary Sugment of invalidity			
39	2024-10-28	Declaration of Angela Madrigal In Support of Defendant Netgear, Inc.'s (1) Motion for Summary Judgment of Non-			
37	2021 10 20	Infringement, (2) Motion for Summary Judgment of Invalidity, and (3) Motion to Exclude Testimony of Stephen			
		Holzen			
40	2018-10-23	Madrigal Declaration - Exhibit 1 - U.S. Patent No. 10,107,893 B2			C/D
41		Madrigal Declaration - Exhibit 2 - U.S. Patent No. 9,642,017 B2			C/D
42		Madrigal Declaration - Exhibit 3 - U.S. Patent No. 9.332,442 B2			C/D
43	2024-07-09	Madrigal Declaration - Exhibit 4 - Rebuttal Expert Report of Henry Holzen, Ph.D. Regarding Non-Infringement of			
		U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893			
44	2023-11-28	Madrigal Declaration - Exhibit 5 - 30(B)(6) Deposition of Sandeep Harpalani			
45	2025-01-25	Madrigal Declaration - Exhibit 6 - Expert Report of Dr. Harry V. Bims Regarding Infringement of U.S. Patent Nos.			Н
		9,642,017, 9,332,442, and 10,107,893			
46	2024-10-21	Madrigal Declaration - Exhibit 7 - Deposition of Harry Bims, Ph.D.			ID
47	2023-11-15	Madrigal Declaration - Exhibit 8 - 30(B)(6) and 30(B)(1) Deposition of Steve L. Gielty			
48	2023-12-13	Madrigal Declaration - Exhibit 9 - 30(B)(6) Deposition of Joseph Emmanuel			
49	2011-08-05	Madrigal Declaration - Exhibit 10 - U.S. Patent 10,107,893 File History - Excerpt			R
50	2019-03-18	Madrigal Declaration - Exhibit 11 - Netgear Orbi Home Wi-Fi System Review (Retested After Two Years)	TT-N-0026111	TT-N-0026145	
51		Madrigal Declaration - Exhibit 12 - Mesh Mashups: Which Mesh System Is Best? - Netgear	TT-N-0089502	TT-N-0089509	
52		Madrigal Declaration - Exhibit 13 - Deposition of Henry Houh, Ph.D.			
53	2024-08-15	Madrigal Declaration - Exhibit 14 - Reply Expert Report of Dr. Harry V. Bims Regarding Infringement of U.S.			H
		Patent Nos. 9,642,017, 9,332,442, And 10,107,893			
54		Madrigal Declaration - Exhibit 15 - Deposition of Thaddeus Gabara			ID
55	2024-01-25	Madrigal Declaration - Exhibit 16 - Expert Report of Henry Houh, Ph.D. Regarding Invalidity of U.S. Patent Nos.			
		9,642,017, 9,332,442, And 10,107,893			
56		Madrigal Declaration - Exhibit 17 - The Software Radio Architecture			
57	2023-11-23	Madrigal Declaration - Exhibit 18 - Plaintiff TrackThings LLC's Objections And Responses To Defendant Netgear,			H
		Inc.'s First Set of Requests For Admission (Nos. 1-30)			
58	2024-08-15	Madrigal Declaration - Exhibit 19 - Reply Expert Report of Henry Houh, Ph.D. Regarding Invalidity of U.S. Patent			
		Nos. 9,642,017, 9,332,442, And 10,107,893			
59	2024-07-09	Madrigal Declaration - Exhibit 20 - Expert Rebuttal Report of Dr. Harry V. Bim Regarding Validity of U.S. Patent			H, MIL
		Nos. 9,642,017, 9,332,442, And 10,107,893			
60		Madrigal Declaration - Exhibit 21 - Affirmative Expert Report Stephen A. Holzen			H, MIL
61		Madrigal Declaration - Exhibit 22 - Reply Expert Report of Stephen A. Holzen			H, MIL
62		Madrigal Declaration - Exhibit 23 - Deposition of Stephen Holzen			ID, MIL
63		Madrigal Declaration - Exhibit 24 - Expert Report of Douglas Kidder Regarding Damages			
64		Madrigal Declaration - Exhibit 25 – 30 (b)(6) Deposition of Anna Lam  Madrigal Declaration - Exhibit 26 – Stations National Pony Express Association			
65					
66		Madrigal Declaration - Exhibit 27 - The Mochila National Postal Museum			
67	2024-10-28	Madrigal Declaration - Exhibit 28 - Patee House Painting and Hollenberg Station Photograph I National Postal Museum			
68		Museum Madrigal Declaration - Exhibit 29 – Asserted Claims			
69	2024 10 20	Madrigal Declaration - Exhibit 29 – Asserted Claims  TrackThings LLC's Partial Motion For Summary Judgment As To Defendant's Affirmative Defenses			H, LC
70		Prack I nings LLC's Partial Motion For Summary Judgment As To Defendant's Affirmative Defenses  Netgear's Rule 7.1 Statement			n, LC
		Retgear's Rule 7.1 Statement TrackThings LLC's Opening Brief In Support of Its Partial Motion For Summary Judgment As To Defendant's			H, LC
71	2024-10-28	Affirmative Defenses			n, LC

H, LC

	Plaintiff's Triāl Exhībit List							
PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS			
72	2024-01-25	Gilman Declaration - Exhibit 1 - Expert Report of Henry Houh, Ph.D. Regarding Invalidity of U.S. Patent Nos. 9,642,017, 9,332,442, And 10,107,893	(* '8/	(,				
73		Gilman Declaration - Exhibit 2 - Deposition Transcript Thaddeus Gabara			ID			
74	2024-07-09	Gilman Declaration - Exhibit 3 - Rebuttal Expert Report of Henry Houh, Ph.D. Regarding Non-Infringement of U.S. Patent Nos. 9.642,017, 9.332,442, and 10,107,893						
75	2022-09-30	Gilman Declaration - Exhibit 4 - Plaintiff TrackThings's First Interrogatories To Defendant			Н			
76	2022-10-31	Gilman Declaration - Exhibit 5 - Defendant Netgear, Inc.'s Objections And Responses To Plaintiff TrackThings LLC's First Set of Interrogatories (Nos. 1-8)						
77	2023-11-10	Gilman Declaration - Exhibit 6 - Defendant Netgear, Inc.'s Supplemental Objections And Responses To Plaintiff TrackThings LLC's Interrogatories Nos. 4 and 6-8						
78	2024-10-28	Timothy K. Gilman's Declaration In Support of TrackThings LLC's Partial Motion For Summary Judgment As To Defendant's Affirmative Defenses						
79	2024-10-28	TrackThings LLC's Partial Motion For Summary Judgment As To Validity of The '893 Patent			R, H, LC			
80		TrackThings LLC's Opening Brief In Support of Its Motion For Summary Judgment As To Validity of The '893 Patent			R, H, LC			
81	2018-10-23	Gilman Declaration - Exhibit 1 - U.S. Patent No. 10,107,893 B2			C/D			
82		Gilman Declaration - Exhibit 2 - U.S. Patent No. 7,167,678 B2						
83		Gilman Declaration - Exhibit 3 - Specification of the Bluetooth System Wireless connection made easy	NETGEAR-TRACK-PA-002189	NETGEAR-TRACK-PA-002301				
84		Gilman Declaration - Exhibit 4 - Expert Report of Henry Houh, Ph.D. Regarding Invalidity of U.S. Patent Nos. 9,642,017, 9,332,442, And 10,107,893						
85		Gilman Declaration - Exhibit 5 - Expert Rebuttal Report of Dr. Harry V. Bims Regarding Validity of U.S. Patent Nos. 9,642,017, 9,332,442, And 10,107,893			H, MIL			
86	2006-03-23	Gilman Declaration - Exhibit 6 - U.S. Patent Application Publication No. 2006/0064533 A1						
87		Timothy K. Gilman's Declaration In Support of TrackThings LLC's Opening Brief In Support of Its Partial Motion For Summary Judgment As To Validity of The '893 Patent			R			
88		Joint Stipulation Mooting Plaintiff TrackThings LLC's Partial Motion For Summary Judgment As To Certain of Defendant Netgear, Inc.'s Affirmative Defenses (D.I. 249)			LC			
89		Netgear, Inc.'s Opposition To TrackThings LLC's Partial Motion For Summary Judgment As To Validity of The '893 Patent						
90		Netgear, Inc.'s Statement of Additional Facts In Support of Its Opposition To TrackThings LLC's Partial Motion For Summary Judgment As To Validity of The '893 Patent						
91	2024-11-13	Netgear, Inc.'s Response To TrackThings LLC's Concise Statement of Uncontested Facts In Support of Its Partial Motion For Summary Judgment As To Validity of The '893 Patent						
92		Declaration of Angela Madrigal In Support of Netgear, Inc.'s Opposition To TrackThings LLC's Partial Motion For Summary Judgment As To Validity of The '893 Patent						
93	2024-10-21	Exhibit B - Deposition of Harry Bims Ph.D.			ID			
94	2024-11-13	TrackThings LLC's Answering Brief In Opposition To Defendant Netgear, Inc.'s Motion To Exclude Testimony of Plaintiff TrackThings LLC's Damages Expert Stephen A. Holzen			H, LC			
95	2024-11-13	TrackThings LLC's Answering Brief In Opposition To Defendant Netgear, Inc.'s Motion For Summary Judgement of Invalidity			H, LC			
96	2024-11-13	TrackThings LLC's Responses To Defendant's Concise Statement of Facts In Support of Defendant Netgear, Inc.'s Motion For Summary Judgement of Invalidity			Н			
97		TrackThings LLC's Concise Statement of Facts In Support of Its Opposition To Defendant Netgear, Inc.'s Motion For Summary Judgement of Invalidity			Н			
					** * *			

2024-11-13 TrackThings LLC's Opposition To Defendant Netgear, Inc.'s Motion For Summary Judgement of Non-Infringement

98

	-	/ / TZP
Plaintiff's	Trial	Exhibit List

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
99		Things LLC's Responses To Defendant's Concise Statement of Facts In Support of Defendant's Motion For nary Judgement of Non-Infringement			Н
100	2024-11-13 Track	Things LLC's Concise Statement of Facts In Support of Its Opposition To Defendant's Motion For Summary ment of Noninfringement			Н
101	Motio	darshini Das' Declaration In Support of TrackThings LLC's Oppositions To Defendant Netgear, Inc.'s (1) on For Summary Judgment of Non-Infringement, (2) Motion For Summary Judgment of Invalidity, And (3) on To Exclude Testimony of Stephen Holzen			
102		Declaration Exhibit A - Deposition Transcript of Douglas Kidder			
103		Declaration Exhibit B - Deposition Transcript of Stephen Holzen			ID, MIL
104		Declaration Exhibit C - Deposition Transcript of Harry Bims			ID
105		Declaration Exhibit D - How to test/confirm strength/quality of satellite connection to main router?	TT-N-0024510	TT-N-0024519	R, F
106		Declaration Exhibit E - Where should I place My Orbi Satellite	TT-N-0024404	TT-N-0024411	R, F
107		Declaration Exhibit F - How do I install my NETGEAR Nighthawk Mesh Wi-Fi 6 Products			
108		Declaration Exhibit G - Deposition Transcript of Joseph Emmanuel			
109		Declaration Exhibit H - Defining the terms driver, firmware, hardware, software and utility			F
110		Declaration Exhibit I - Oxford Dictionary of Computing			F
111		Declaration Exhibit J - App Store Preview - NETGEAR Orbi - Wi-Fi System App on the App Store			F
112		Declaration Exhibit K - NETGEAR Nighthawk - Wi-Fi App on the App Store			F
113	2023-04-12 Das D	Declaration Exhibit L - What is daisy Chain and How does it work with my Orbi Wi-Fi System or Nighthawk System?			F
114	2023-08-14 Das D	Declaration Exhibit M - Qualcomm Wi-Fi SON and distributed networking			F
115	2019-03-18 Das D	Declaration Exhibit N - Netgear Orbi Home Wi-Fi System Review (Retested After Two Years)			F
116	2016-12-20 Das D	Declaration Exhibit O - Notice of Allowance and Fee(s) Due			
117	Das D	Declaration Exhibit P - Decision On Appeal			
118	2018-09-20 Das D	Declaration Exhibit Q - Application No. 15/693,379 - Remarks			
119		Declaration Exhibit R - U.S. Patent No. 10,209,150 B2			
120	2013-12-02 Das D	Declaration Exhibit S - In The United States Patent Abd Trademark office Patent Application			
121	2024-11-27 Defen	dant Netgear, Inc.'s Reply in Support of Its Motion for Summary Judgment of Non-Infringement			
122	2024-11-27 Defen	dant Netgear, Inc.'s Reply Brief in Support of Its Motion for Summary Judgement of Invaldiity			
123	Stepho	dant Netgear, Inc.'s Reply Brief in Support of Its Motion to Exclude Testimony of Plaintiff's Damages Expert en A. Holzen			
124	to Def	dant Netgear, Inc.'s Response to TrackThings, LLC's Concise Statement of Facts in Support of Its Opposition fendant's Motion for Summary Judgment of Invalidity			
125	to Def	dant Netgear, Inc.'s Response to TrackThings, LLC's Concise Statement of Facts in Support of Its Opposition fendant's Motion for Summary Judgment of Non-Infringement			
126	Judgn	ration of Ruben Chen in Support of Netgear, Inc.'s Reply Brief in Support of Its (1) Motion for Summary ment of Non-Infringement, (2) Motion for Summary Judgment of Invalidity, and (3) Motion to Exclude mony of Stephone A. Holzen			
127	Chen	Exhibit 1 - emails exchanged between counsel for the parties			
128		Exhibit 2 - excerpts from the October 16, 2024 Deposition Transcript of Henry Houh, Ph.D.			
129		Exhibit 3 - excerpts from the January 5, 2024 Deposition Transcript of Anna Lam			
130	2024-11-27 Track Patent	Things LLC's Reply Brief in Support of Its Motion for Summary Judgement as to the Validity of the '893 t			R, LC
131	Summ	Things LLC's Response to Netgear's Statement of Additional Facts Re TrackThings' Partial Motion for nary Judgment and to Validity of the '893 Patent			R
132		thy K.Gilman Declaration in Support of TrackThings' Reply Brief Regarding Its Motion for Summary the the Validity of the '893 Patent			R

Case 1:22-cv-00981-JLH	Document 397	Filed 07/29/25	Page 125 of 954 PageID #:
TRACI	KTHINGS LLC v. NETGEAR	TYC5, Case No. 22-981-JLF Exhibit List	ı
	Plaintiff's Trial I	Exhibit List	

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
133		Gilman Exhibit 7 - excerpts from the File History of U.S. Patent No. 10,107,893	TT-N-0000260	TT-N-0000279	R
134	2024-10-16	Gilman Exhibit 8 - excerpts from the October 16, 2024 deposition transcript of Henry Houh, Ph.D.			
135	2024-01-25	Gilman Exhibit 9 - excerpts from the Expert Report of Henry Houh, Ph.D. Regarding Invalidity of U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893			
136		[Deleted]			LC
137		[Deleted]			D/C, LC
138	2022-09-12	Defendant Netgear, Inc.'s Rule 26(A)(1) Disclosures			R, 403
139	2022-09-12	Plaintiff's Rule 26(a)(1) Initial Disclosures			R, 403
140		Defendant Netgear Inc.'s Amended Rule 26(a)(1) Disclosures			R, 403
141	2023-12-22	Plaintiff's Rule 26(a)(1) First Amended Initial Disclosures			R, 403
142	2023-10-06	Defendant Netgear Inc.'s Objections and Responses to Plaintiff Trackthing's First Set of Requests for Admissions (Nos. 1-30)			R, 403
143		Plaintiff TrackThings LLC's Objections and Responses to Defendant Netgear Inc.'s First Set of Requests for Admission (Nos. 1-30)			H, R, 403
144	2022-10-31	Defendant Netgear, Inc.'s Objections and Responses to Plaintiff TrackThings LLC's First Set of Interrogatories (Nos. 1-8)			R, 403
145	2023-06-12	Defendant Netgear, Inc.'s Objections and Responses to Plaintiff TrackThings LLC's Second Set of Interrogatories (Nos. 9-14)			R, 403
146	2023-09-14	Plaintiff Trackthings' Responses and Objections to Defendant Netgear, Inc.'s First Set of Interrogatories (Nos. 1-14)			H, R, 403
147	2023-10-06	Defendant Netgear, Inc.'s Objections and Responses to Plaintiff Trackthings' Third Set of Interrogatories (Nos. 15-24)			R, 403
148	2023-10-31	Plaintiff Trackthings' Supplemental Objections and Responses to Defendant Netgear, Inc.'s Interrogatory Nos. 1, 6			H, R, 403
149	2023-11-01	Defendant Netgear, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's Interrogatories Nos. 1 and 2			R, 403
150	2023-11-10	Defendant Netgear, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's Interrogatories Nos. 4 and 6-8			R, 403
151	2023-11-10	Defendant Netgear, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's Interrogatories Nos. 9, 13 and 14			R, 403
152	2023-11-13	Plaintiff Trackthings' LLC's Objections and Responses to Defendant Netgear, Inc.'s Second Set of Interrogatories (Nos. 15-25)			H, R, 403
153		Plaintiff Trackthings' First Supplemental Responses and Objections to Defendant Netgear Inc.'s Interrogatory Nos. 8-9, 11-12, 15, 19, 21, 24-25 and Second Supplemental Response and Objections to Interrogatory 10			H, R, 403
154		Defendant Netgear, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's Interrogatories Nos. 2 and 5			R, 403
155		Defendant Netgear, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's Interrogatories Nos. 16-19, 23, 24			R, 403
156		Defendant Netgear, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's Interrogatory No. 10			R, 403
157		Plaintiff Trackthings' First Supplemental Responses and Objections to Defendant Netgear Inc.'s Interrogatory Nos. 5, 14, 22 and Second Supplemental Responses and Objections to Interrogatory Nos. 15, 24			H, R, 403
158		Defendant Netgear, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's Interrogatories Nos. 2, 5, 6 and 8			R, 403
159	2023-12-22	Defendant Netgear, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's Interrogatories Nos. 12 and 14			R, 403

PTX	DATED DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
160	2023-12-22 Defendant Netgear, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's Interrogatories Nos. 15, 17, 20-22		, ,	R, 403
161	2024-01-12 Plaintiff Trackthings' Second Supplemental Responses and Objections to Netgear Inc.'s Interrogatory Nos. 11, 14 21 and Third Supplemental Responses and Objections to Netgear Inc.'s Interrogatory No. 24	,		H, R, 403
162	2022-10-31 Defendant Netgear Inc.'s Objections and Responses to Plaintiff TrackThings LLC's First Set of Requests for Production (Nos. 1-43)			R, 403
163	2023-06-12 Defendant Netgear Inc.'s Objections and Responses to Plaintiff TrackThings LLC's Second Set of Requests fpr Production of Documents and Things (Nos. 44-58)			R, 403
164	2023-09-15 Plaintiff Trackthings' Responses and Objections to Defendant Netgear, Inc.'s First set of Requests for Production (Nos. 1-43)			H, R, 403
165	2023-10-06 Defendant Netgear Inc.'s Objections and Responses to Plaintiff Trackthings' Third Requests for Production and Things (Nos. 59-70)			R, 403
166	2023-12-22 Plaintiff Trackthings' Responses and Objections to Defendant Netgear, Inc.'s Second Set of Requests for Production (No. 44)	on		H, R, 403
167	2023-02-09 Defendant Netgear Inc.'s Proposed Claim Terms for Construction			R, 403, MIL
168	2023-02-09 TrackThings LLC's Preliminary List of Claim Terms for Construction			R, 403, MIL
169	2023-02-21 Defendant Netgear Inc.'s Proposed Claim Constructions			R, 403, MIL
170	2023-02-21 Plaintiff's Disclosure of Proposed Constructions for Claim Terms			R, 403, MIL
171	2023-02-27 Defendant Netgear, Inc.'s Disclosure of Intrinsic Evidence			R, 403, MIL
172	2023-02-27 Plaintiff's Disclosure of Proposed Constructions for Claim Terms with Supporting Intrinsic Evidence			R, 403, MIL
173	2022-10-31 Defendant Netgear Inc.'s Objections To Report And Recommendation On Claim Construction			R, 403, MIL
174	2023-03-16 Plaintiff TrackThings LLC's Opening Claim Construction Brief			R, 403, MIL
175	2023-04-17 Defendant Netgear Inc.'s Answering Claim Construction Brief			R, 403, MIL
176	2023-05-19 Joint Claim Construction Brief			R, 403, MIL
177	2023-05-19 Joint Appendix of Exhibits To Joint Claim Construction Brief with Exhibits 1-27			R, 403, MIL
178	2023-05-22 Joint Motion For Claim Construction			R, 403, MIL
179	2022-12-15 Plaintiff's Preliminary Infringement Contentions			H, R, 403
180	2022-12-15 Ex. A - Plaintiff's Preliminary Infringement Contentions for U.S. Patent No. 9,642,017			H, R, 403
181	2022-12-15 Ex. B - Plaintiff's Preliminary Infringement Contentions for U.S. Patent No. 9,332,442			H
182	2022-12-15 Ex. C - Plaintiff's Preliminary Infringement Contentions for U.S. Patent No. 10,107,893			H, R, 403
183	2023-09-14 Plaintiff's Final Infringement Contentions			H, R, 403
184	2023-09-14 Ex. A - Plaintiff's Final Infringement Contentions for U.S. Patent No. 9,642,017			H, R, 403
185	2023-09-14 Ex. B - Plaintiff's Final Infringement Contentions for U.S. Patent No. 9,332,442			Н
186	2023-09-14 Ex. C - Plaintiff's Final Infringement Contentions for U.S. Patent No. 10,107,893			H, R, 403
187	2023-01-26 Netgear's Initial Invalidity Contentions			
188	Exhibit A-1 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. 1 2006/0056370 ("Hancock")			
189	Exhibit A-2 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. No. 2004/0236547 ("Rappaport I")	No.		
190	Exhibit A-3 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 7,376,087 ("Srikrishna")			
191	Exhibit A-4 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. 1 2004/0246936 ("Perlman")	No.		
192	Exhibit A-5 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. N 2008/0039016 ("Bonta")	No.		
193	Exhibit A-6 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 5,875,179 ("Tikalsky")			
	2008/0039016 ("Bonta") Exhibit A-6 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 5,875,179	No.		

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
194		Exhibit A-7 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 6,980,080 ("Christensen")		· · ·	
195		Exhibit A-8 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. No. 2006/0205341 ("Runyon")			
196		Exhibit A-9 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 7,423,525 ("Chung I")			
197		Exhibit A-10 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 7,486,632 ("Ookuma")			
198		Exhibit A-11 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. No. 2006/0166618 ("Bakaimis")			
199		Exhibit A-12 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 9,642,017 ("Acampora I")			
200		Exhibit A-13 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of Koskinen			
201		Exhibit B-1 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 6,751,455 ("Acampora I")			
202		Exhibit B-2 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Publication No. 2005/0232179 ("da Costa")			
203		Exhibit B-3 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2008/0039016 A1 ("Bonta")			
204		Ehxibit B-4 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 7,423,535 "Chung P")			
205		Exhibit B-5 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2006/0056370 A1 ("Hancock")			
206		Exhibit B-6 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2008/0108317 ("Hsieh")			
207		Exhibit B-7 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 6,925,069 ("Koos")			
208		Exhibit B-8 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 6,049,593 ("Acampora II")			
209		Exhibit B-9 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2006/0046644 ("Chung II")			
210		Exhibit B-10 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 9,130,641 B2 ("Mohebbi")			
211		Exhibit B-11 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 7,404,074 ("Murotake")			
212		Exhibit B-12 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2004/0236547 ("Rappaport I")			
213		Exhibit B-13 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Pub. No. 2002/0197998 ("Schmidt")			
214		Exhibit B-14 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2007/0160020 ("Osann")			
215		Exhibit B-15 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2006/0154691 ("Tang")			
216		Exhibit B-16 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 7,184,466 ("Seemann")			
217		Exhibit B-17 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2005/0042999 ("Rappaport II")			

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
218		Exhibit C-1 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent No. 7,167,678 ("Powers")	\	,	
219		Exhibit C-2 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent No. 6,907,226 ("Kang")			
220		Exhibit C-3 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent Application Pub. No. 2003/0018735 ("Fujii")			
221		Exhibit C-4 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent Application Publication No. 2003/0223377 ("Simmons")			
222		Exhibit C-5 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent Application Pub. No. 2008/010120 ("Maruyama")			
223		Exhibit C-6 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent Application Publication No. 2008/015801 ("Mizuta")			
224		Exhibit C-7 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of Chang			
225		Exhibit C-8 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent Application Pub. No. 2008/0288686 ("Hikabe")			
226		Exhibit C-9 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of Bluetooth Spec. 802.15.1			
227		Exhibit C-10 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of Bluetooth Spec.			
228	2023-10-	-12 Netgear's Invalidity Contentions			
229		Exhibit A-1 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. No. 2006/0056370 ("Hancock")			
230		Exhibit A-2 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. No. 2004/0236547 to Rappaport et al. ("Rappaport I")			
231		Exhibit A-3 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 7,376,087 ("Srikrishna")			
232		Exhibit A-4 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. No. 2004/0246936 ("Perlman")			
233		Exhibit A-5 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. No. 2008/0039016 ("Bonta")			
234		Exhibit A-6 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 5,875,179 ("Tikalsky")			
235		Exhibit A-7 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 6,980,080 ("Christensen")			
236		Exhibit A-8 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. No. 2006/0205341 ("Runyon")			
237		Exhibit A-9 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 7,423,525 ("Chung I")			
238		Exhibit A-10 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 7,486,632 ("Ookuma")			
239		Exhibit A-11 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent Application Pub. No. 2006/0166618 ("Bakaimis")			
240		Exhibit A-12 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of U.S. Patent No. 9,642,017 ("Acampora I")			
241		Exhibit A-13 - Claim Chart for U.S. Patent 9,642,017 (the "'017 Patent") in view of Koskinen			
242		Exhibit B-1 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S Patent No. 6,751,455 to Acampora ("Acampora I")			
243		Exhibit B-2 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Publication No. 2005/0232179 to da Costa et al. ("da Costa")			

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO.	BATES NO.	NETGEAR'S
244		E 1 1 1 1 D 2 CH 1 CH 1 C T I C D 1 1 C 222 442 (41 W 442 D 1 1 1 2 1 1 C T I C D 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(beg)	(end)	OBJECTIONS
244		Exhibit B-3 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2008/0039016 A1 to Bonta et al. ("Bonta")			
245		Ehxibit B-4 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 7,423,535 to Chung et al. ("Chung I")			
246		Exhibit B-5 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No.			
		2006/0056370 A1 to Hancock et al. ("Hancock")			
247		Exhibit B-6 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2008/0108317 to Hsieh et al. ("Hsieh")			
248		Exhibit B-7 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 6,925,069 to Koos, Jr. et al. ("Koos")			
249		Exhibit B-8 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 6,049,593 to			
		Acampora ("Acampora II")			
250		Exhibit B-9 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No.			
		2006/0046644 to Chung et al. ("Chung II")			
251		Exhibit B-10 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. 9,130,641 B2 to Mohebbi			
		("Mohebbi")			
252		Exhibit B-11 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 7,404,074 to			
		Murotake ("Murotake")			
253		Exhibit B-12 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub.			
254		No. 2004/0236547 to Rappaport et al. ("Rappaport I")  Exhibit B-13 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Pub. No.			
254		2002/0197998 ("Schmidt")			
255		Exhibit B-14 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub. No. 2007/0160020 ("Osann")			
256		Exhibit B-15 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub.			
		No. 2006/0154691 ("Tang")			
257		Exhibit B-16 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent No. 7,184,466 ("Seemann")			
258		Exhibit B-17 - Claim Chart for U.S. Patent 9,332,442 (the "'442 Patent") in view of U.S. Patent Application Pub.			
		No. 2005/0042999 to Rappaport II ("Rappaport II")			
259		Exhibit C-1 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent No. 7,167,678			
		("Powers")			
260		Exhibit C-2 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent No. 6,907,226			
		("Kang")			
261		Exhibit C-3 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent Application Pub.			
262		No. 2003/0018735 ("Fujii")  Exhibit C-4 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent Application			
202		Publication No. 2003/0223377 ("Simmons")			
263		Exhibit C-5 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent Application Pub.			
203		No. 2008/010120("Maruyama")			
264		Exhibit C-6 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent Application			
		Publication No. 2008/015801 ("Mizuta")			
265		Exhibit C-7 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of Chang			
266		Exhibit C-8 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of U.S. Patent Application Pub.			
		No. 2008/0288686 ("Hikabe")			
267		Exhibit C-9 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of Bluetooth Spec. 802.15.1			
268		Exhibit C-10 - Claim Chart for U.S. Patent 10,107,893 (the "893 Patent") in view of Bluetooth Spec.			

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
269	2021-10-01 I	Initial Conference before Judge Katherine Polk Failla, dated October 1, 2021			R, LC
270	2023-06-21	Markman Hearing - 101 Motion Transcript before Judge Jennifer L. Hall, dated June 21, 2023			LC
271	2023-06-28 Continuation of Markman Hearing before Judge Jennifer L. Hall, dated June 28, 2023				LC
272	2023-11-06 I	Discovery Dispute Hearing Transcript before Judge Jennifer L. Hall, dated November 6, 2023			R
273		Discovery Dispute Hearing Transcript before Judge Jennifer L. Hall, dated January 8, 2025			LC
274	2025-02-19	Summary Judgment Hearing Transcript before Judge Jennifer L. Hall, dated February 19, 2025			LC
275	2023-11-28	Sandeep Harpalani Deposition Transcript			
276		Defendant Netgear, Inc.'s Objections and Responses to Plaintiff TrackThings LLC's First Notice of Deposition			R
277		Pursuant to Rule 30(b)(6) Netgear Orbi P1 Exit (Jonathan Wu and Michael Chen)	NETCEAR TRACK 007040	NETCEAR TRACK 007071	
277 278		Netgear Orbi P1 Exit (Jonathan Wu and Michael Chen) Netgear Orbi Mini Router and Bundles - RBR30, RBS30, RBW30, RBK40 and RBK30 (P1 Exit)	NETGEAR-TRACK-007040 NETGEAR-TRACK-007381	NETGEAR-TRACK-007071 NETGEAR-TRACK-007405	
279			NETGEAR-TRACK-00/381	NETGEAR-TRACK-00/405	
		Orbi WiFi 6 Survey			
280		Orbi WiFi 6E + Orbi WiFi 6 Survey	TT N. 0002450	TT N. 0002475	
281		Netgear WiFi Survey	TT-N-0082458	TT-N-0082475	A E DE II
282		YouTube Orbi Quad band Mesh WiFi6E System screenshot			A, F, BE, U
202		https://www.youtube.com/watch?v=4T2ACBZOe3M	NETTOTAL TO THE LOVE COOLED	NETGE A D. ED A GW 000 465	
283	N/A [	Netgear Messaging Brief - Orbi Mesh WiFi System (4-pack) RBK14	NETGEAR-TRACK-009459	NETGEAR-TRACK-009467	
284		Netgear Daisy Chain Webpage (printed November 24, 2023)			A, F, U
		https://www.netgear.com/hub/wifi/mesh/daisy-chain/			
285		Aaron Johnson Deposition Transcript			_
286		Plainiff Trackthing's First Notice of Deposition of Defendant Netgear, Inc. Pursuant to Rule 30(b)(6)			R
287		Excel - Re - Total US Summary and Cost Summary	NETGEAR-TRACK-009760	NETGEAR-TRACK-009760	
288		Netgear Excel spreadsheet (sales and revenue)	NETGEAR-TRACK-009987		
289		Excel - Product List	NETGEAR-TRACK-009862	NETGEAR-TRACK-009862	
290		Excel - Subscriptions by Quarter	NETGEAR-TRACK-009988	NETGEAR-TRACK-009988	
291		Excel - Service Revenue Carve Out	NETGEAR-TRACK-011071	NETGEAR-TRACK-011071	
292		Netgear, Inc. NasdaqGS:NTGR FQ1 2017 Earnings Call Transcripts	TT-N-0082098	TT-N-0082113	
293		Ravindra Bhilave Deposition Transcript			
294		Amended Notice of Deposition of Ravindra Bhilave			
295		Ravindra Bhilave LinkedIn Profile (printed 11/30/2023)			
296		WiFi7 Orbi 10, P1 Exit	NETGEAR-TRACK-008253	NETGEAR-TRACK-008287	
297		Excel - Product List	NETGEAR-TRACK-011072	NETGEAR-TRACK-011072	
298		WiFi 7 vs. WiFi 6. More Speed & Capacity (printed 11/30/2023)			
		https://www.netgear.com/hub/technology/wifi-7-vs-wifi-6/			
299		Orbi RBK853 vs. RBK863S Best-Selling Mesh Evolved (printed 11/30/2023)			
		https://www.netgear.com/hub/wifi/mesh/orbi-rbk853-vs-rbk863s/			
300	2023-12-13 J	Joseph Emmanuel Deposition Transcript			
301	2023-09-06 I	Plaintiff Trackthings' First Notice of Deposition of Defendant Netgear, Inc. Pursuant to Rule 30(b)(6)			R
302	2023-12-05	Amended Notice of Deposition of Joseph Emmanuel			R
303		Netgear website printout for whole-home mesh WiFi (printed 12/11/2023) https://www.netgear.com/home/wifi/mesh/			
304		Netgear website printout for Orbi Mesh and Orbi Pro Systems (printed 12/11/2023)	+		
30 <del>4</del>		https://www.netgear.com/support/product/orbi			
305		Netgear website printout for Nighthawk Mesh WiFi 6 Systems (printed 12/11/2023)			
		https://www.netgear.com/support/product/nighthawk-mesh			
306		Joseph Emmanuel LinkedIn Profile (printed December 2023)			
307		"Patents" section of Joseph Emmanuel's LinkedIn Profile (printed 12/2023)			

PTX	DATED DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
308	Netgear - Orbi Whole Home AC1200 Mesh WiFi System Data Sheet RBK12	NETGEAR-TRACK-002117	NETGEAR-TRACK-002120	
309	Nighthawk Mesh WiFi 6 System Data Sheet MK62	NETGEAR-TRACK-000938	NETGEAR-TRACK-000944	
310	2019-06-05 Foxconn Confidential Nighthawk Mesh 2.0 diagrams	NETGEAR-TRACK-010248	NETGEAR-TRACK-010267	
311	2020 Netgear Orbi Whole Home Tri-band Mesh WiFi 6 Satellite Data Sheet RBS750	NETGEAR-TRACK-004490	NETGEAR-TRACK-004493	
312	2020-07-09 Foxconn Confidential RBR750 (Qorvo Version)	NETGEAR-TRACK-010591	NETGEAR-TRACK-010627	
313	2020-06-09 United States Patent 10,681,698 B2			
314	2023-12-10 Webpage: Level up your mesh Wi-Fi: A deep dive into Qualcomm Multi-Link Mesh [+video] (print https://www.qualcomm.com/news/onq/2023/03/mesh-wi-fi-video-deep-dive-into-qualcomm-multi-lin	red 12/10/2023) nk-mesh		
315	2019-02-20 Easy Mesh 11AX System PO Exit	NETGEAR-TRACK-006332	NETGEAR-TRACK-006349	
316	2023-12-11 Webpage - Where should I place my Orbi satellite? (printed 12/11/2023) https://kb.netgear.com/31029/Where-should-I-place-my-Orbi-satellite			R
317	2023-12-11 Webpage - How do I install my Netgear Nighthawk Mesh WiFi 6 products? (printed 12/11/2023) https://kb.netgear.com/000061554/how-do-i-install-my-netgear-nighthawk-mesh-wifi-6-products			R
318	2023-12-11 Webpage - How do I sync an add-on satellite with my Orbi Pro router? (printed 12/11/2023) https://kb.netgear.com/000046289/How-do-I-sync-an-add-on-satellite-to-my-Orbi-Pro-router			
319	2019-05-14 United States Patent 10,292,159 B2			
320	2023-12-11 Webpage - What do the LEDs on my Orbi router and satellite mean? (printed 12/11/2023) https://kb.netgear.com/31030/What-do-the-LEDs-on-my-Orbi-router-and-satellite-mean			R, U
321	2023-12-11 Webpage - What is daisy chain and how does it work with my Orbi WiFi System or Nighthawk Mesh (printed 12/11/2023) https://kb.netgear.com/000048458/What-is-daisy-chain-and-how-does-it-work-with-my-Orbi-WiFi-S Nighthawk-Mesh-System			R, U
322	2023-12-15 Steve L. Gielty Deposition Transcript			
323	2023-09-06 Plaintiff Trackthings' First Notice of Deposition of Defendant Netgear, Inc. Pursuant to Rule 30(b)(6)	)		R
324	2023-12-05 Amended Notice of Deposition of Steve Gielty			R
325	2023-12-13 Netgear's Whole Home Mesh WiFi webpage (printed 12/13/2023) https://www.netgear.com/home/wifi/mesh/			U
326	2023-12-11 Business Mesh WiFi Systems webpage (printed 12/11/2023) https://www.netgear.com/business/wifi/mesh/			U
327	2023-12-11 Netgear Orbi Mesh and Orbi Pro Systems webpage (printed 12/11/2023) https://www.netgear.com/support/product/orbi			U
328	2023-12-11 Nighthawk Mesh WiFi 6 Systems webpage (printed 12/11/2023) https://www.netgear.com/support/product/nighthawk-mesh			U
329	2023-12 Steve Gielty LinkedIn profile (printed 12/2023)			
330	2023-12-13 Orbi App - Orbi Setup webpage (printed 12/13/2023)			U
331	https://www.netgear.com/home/services/orbi-app/  2023-12-13 Netgear Nighthawk App webpage (printed 12/13/2023) https://www.netgear.com/home/services/nighthawk-app/			U
332	2023-12-13 Introducing Netgear's Insight App webpage (printed 12/13/2023) https://www.netgear.com/hub/business/network/netgears-insight-app/			U
333	2023-12-13 Orbi Login & Setup webpage (printed 12/13/2023) https://www.netgear.com/home/services/orbilogin/			U
334	2023-12-13 Netgear Orbi - WifFi System App webpage (Google) (printed 12/13/2023) https://play.google.com/store/apps/details?id=com.dragonflow.android.orbi&hl=en_US&gi=us			U
335	2023-12-13 Netgear Nighthawk - WiFi App webpage (Apple) (printed 12/13/2023) https://apps.apple.com/us/app/netgear-nighthawk-wifi-app/id1124666597			U

PTX	DATED DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
336	2023-12-13 Netgear Nighthawk - WiFi Router webpage (Google) (printed 12/13/2023)		` '	U
	https://play.google.com/store/apps/details?id=com.netgear.netgearup&hl=en			
337	2023-12-13 Netgear Insight on the App Store webpage (Apple) (printed 12/13/2023)			U
	https://apps.apple.com/us/app/netgear-insight/id1186392308?platform=iphone			
338	2023-12-13 Netgear Insight - Apps on Google Play (Google) (printed 12/13/2023)			U
	https://play.google.com/store/apps/details?id=com.netgear.insight&hl=en_US≷=US			
339	2023-12-12 Webpage: How do I sync a satellite that came with my Orbi Pro WiFi System? (printed 12/12/2023)			U
	https://kb.netgear.com/000046288/How-do-I-sync-a-satellite-that-came-with-my-Orbi-Pro-WiFi-System			
340	Excel - Satellites and Topology	NETGEAR-TRACK-011070	NETGEAR-TRACK-011070	
341	2022-06 WiFi7 Orbi9 P1 Exit	NETGEAR-TRACK-008321	NETGEAR-TRACK-008361	
342	2024-01-05 Anna Lam 30(b)(6) Deposition Transcript			
343	2023-09-06 Plaintiff Trackthings' First Notice of Deposition of Defendant Netgear, Inc. Pursuant to Rule 30(b)(6)			R
344	2024-01-03 Notice of Deposition of Anna Lam			R
345	Anna Lam Linkedin Profile			
346	2017-10-05 Settlement and Non-Exclusive Patent License Agreement between Magnacross LLC and Netgear, Inc.	NETGEAR-TRACK-009932	NETGEAR-TRACK-009946	
347	2023-12-19 Thaddeus Gabara Deposition Transcript			ID
348	2023-10-26 Defendant Netgear Inc.'s Notice of Deposition of Plaintiff Trackthings, LLC Pursuant to Fed. R. Civ. P. 30(b)(6)			R
349	2023-10-26 Defendant Netgear Inc.'s Notice of Deposition of Thaddeus Gabara			R
350	2011-09-17 New Jersey Department of the Treasury, Certificate of Formation (TrackThings LLC)	TT-N-0073509	TT-N-0073509	
351	2022-11-16 Confirmation of Assignment between TrackThings LLC, Thaddeus Gabara and Helen Gabara	TT-N-0021992	TT-N-0021995	
352	2014-05-07 Assignment of Patent Rights	TT-N-0073546	TT-N-0073548	
353	2013-04-16 Assignment of Patent Rights	TT-N-0073561	TT-N-0073562	
354	2011-09-17 Assignment of Patent Rights	TT-N-0073549	TT-N-0073551	
355	2012-01-08 Estate Planning Document (Spreadsheet)	TT-N-0074134	TT-N-0074134	R
356	2007-03-01 Ad-Hoc Wireless Network (Patent #9,642,017)	TT-N-0077002	TT-N-0077002	C/D
357	2022-11-30 TrackThings LLC's Opposition to Netgear Inc.'s Motion for Judgment on the Pleadings			H, LC
358	2011-08-05 Adaptable and Intelligent Master/Slave System (Patent #10,107,893)	TT-N-0077652	TT-N-0077652	C/D
359	2005-10-21 Notebook excerpts	TT-N-0006673	TT-N-0006676	403, Q, R
360	2005-02-16 Invention Notebook	TT-N-0073832	TT-N-0074077	403, Q, R
361	2020-06-14 Idea Notebook	TT-N-0073751	TT-N-0073831	403, Q, R
362	Claim Document	TT-N-0023507	TT-N-0023510	BE, 403
363	Patent Figures (Patent '017)	TT-N-0023491	TT-N-0023498	BE, 403
364	Apparatus and Method for Improving the Integrity and Perfomance of an Ad-Hoc Wireless Network	TT-N-0023511	TT-N-0023520	BE, 403
365	Patent Figures (Patent '893)	TT-N-0023757	TT-N-0023776	BE, 403
366	Apparatus and Method to Automatically Set a Master-Slave Monitoring System	TT-N-0023712	TT-N-0023726	BE, 403
367	2023-12-18 Webpage: TrackThings LLC Sale and Licensing of Patents (printed 12/18/2023)			U, F, A
	http://web.archive.org/web/20220311225530/https://www.trackthings.tech/			
368	2017-10-17 TrackThings Correspondence with attachments	TT-N-0073457	TT-N-0073466	
369	2024-01-25 Affirmative Expert Report Stephen A. Holzen			H, MIL
370	2024-08-15 Reply Expert Report of Stephen A. Holzen			H, MIL
371	2016-00-00 Winning the Patent Damages Case	_		U, BATES
372	2023-11-28 30(b)(6) Deposition of Sandeep Harpalani			
373	Amazon.com - Ax1800 WiFi6 Extender, Wireless Signal Booster			U
374	Amazon.com - Amped REC33A Wireless High Power Plug-in AC1750 Wi-Fi Range Extender			U
375	2024-01-05 30(b)(6) Deposition of Anna Lam			

### BATES NO. BATES NO. NETGEAR'S PTX DATED DESCRIPTION OF EXHIBITS AND WITNESSES (beg) (end) **OBJECTIONS** 376 2024-01-25 Expert Report of Dr. Harry V. Bims Regarding Infringement of U.S. Patent Nos. 9,642,017, 9,332,442, and 10.107.893 377 2017-04-20 Settlement Agreements as Comparables: New Comprehensive Analysis from the Federal Circuit TT-N-0100005 TT-N-0100049 00-00-1999 Valuing intellectual property and calculating infringement damages; a nonauthoritative guide; Consulting services practice aid, 99-2 Joseph A. 2023-01-18 Certified Patent Valuation Analysis Session #4: Developments Impacting Reasonable Royalty Damages 379 380 2024-07-09 Expert Report of Douglas Kidder Regarding Damages 381 Douglas Kidder Curriculum Vitae TrackThings LLC v. Netgear, Inc. Calculation of Patent Allocations 382 H. MIL. DEM 383 TrackThings LLC v. Netgear, Inc. Netgear Accused Product P& L BATES 2024-01-25 Expert Report of Henry Houl, PH.D Regarding Invalidity of U.S. Patent Nos. 9.642.017, 9.332.442, and 10.107.893 384 R. 403 385 2024-07-09 Rebuttal Expert Report of Henry Houh, PH.D Regarding Non-Infringement of U.S. Patent Nos. 9,642,017, R, 403 9.332.442, and 10.107.893 386 2024-07-09 Ex. A Materials Considered Rebuttal Expert Report of Henry Houh, PH.D Regarding Non-Infringement of U.S. R, 403 Patent Nos. 9,642,017, 9,332,442, and 10,107,893 2024-08-15 Reply Expert Report of Henry Houh, PH.D Regarding Non-Infringement of U.S. Patent Nos. 9,642,017, 9,332,442, 387 R. 403 and 10.107.893 2024-08-15 Ex. A Materials Considered Reply Expert Report of Henry Houh, PH.D Regarding Non-Infringement of U.S. Patent 388 R. 403 Nos. 9.642.017, 9.332.442, and 10.107.893 389 2023-05-20 Patent: U.S. Patent No. 7.376.087 B2 (Srikrishna) 2006-03-16 Patent: U.S. Patent Application Publication No. 2006/0056370 A1 (Hancock) 390 391 2004-06-15 Patent: U.S. Patent No. 6,751,455 B1 (Acompora) 392 2007-06-23 Patent: U.S. Patent No. 7,167,678 B2 (Powers) 393 2023-12-15 Deposition Transcript of Steve Gielty - 30 (b)(6) and 30 (b)(1) 394 2023-12-11 Netgear What is Daisy Chain and how does it work with my Orbi WiFi System or Nighthawk Mesh System? BATES, A, X 395 Foxconn Confidential Nighthawk Mesh 2.0 NETGEAR-TRACK-010248 NETGEAR-TRACK-010267 396 Expert Report of Douglas Kidder Regarding Damages R. 403 397 DEM, X Average Selling Prices Exhibit 7 Mesh Extender ASP, 2020 O4 398 Netgear License Summary Exhibit 3 DEM. S. X 399 2021-01-13 Qualcomm IPQ8074.ILQ.11.5.1 ED3 Release Notes OCTRACKTHINGSNETGEAR981 0002197 OCTRACKTHINGSNETGEAR981 0002234 H, F 2024-01-25 Expert Report of Dr. Harry V. Bims Regarding Infringement of U.S. Patent Nos. 9.642,017, 9.332,442, And 400 H. R. 403 10.107.893+D168 2024-01-25 Expert Report of Dr. Harry V. Bimis Regarding Infringement of U.S. Patent Nos. 9,642,017, 9,332,442 and 401 H, R, 403 2024-07-09 Expert Rebuttal Report of Dr. Harry V. Bims Regarding Validity of U.S. Patent Nos. 9,642,017, 9,332,442 and 402 H, R, 403 2024-08-15 Reply Expert Report of Dr. Harry V. Bims Regarding Infringement of U.S. Patent Nos. 9,642,017, 9,332,442 and 403 H, R, 403 10.107.893 404 2018-10-23 Patent: U.S. Patent No. 10,107,893 R. 403 405 00-00-2016 Article - Winning the patent Damages Case A, BATES, 403 2023-11-28 Deposition Transcript of Sandeep Harpalani 406 DD 407 Amazon – AX1800 Wi-Fi 6 Extender, Wireless Signal Booster, 2,000 Sq. ft Coverage, Speeds up to 1.8Gbps A, F, BATES, H (1800Mbps), 5GHz & 2.4GHz Dual Band, Multiple Running Modes Wi-Fi Repeater for Home Amazon – Amped REC33A Wireless High Power Plug-in AC1750 Wi-Fi Range Extender 408 A. F. BATES, H 409 2024-01-05 Deposition Transcript of Anna Lam DD

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410	2024-01-25 Expert Report of Dr. Harry V. Bims Regarding Infringement of U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893				H, R, 403
411	2024-01-25	Expert Report of Dr. Harry V. Bims - Exhibit A - Harry V. Bims CV			H, R, 403
412	2024-01-25	Expert Report of Dr. Harry V. Bims - Exhibit B - Materials Considered			H, R, 403
413		Expert Report of Dr. Harry V. Bims - Exhibit C - Accused Netgear Products and Brands			H, R, 403
414	2024-08-15	Reply Expert Report of Dr. Harry V. Bims Regarding Infringement of U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893			H, R, 403
415	2024-08-15	Reply Expert Report of Dr. Harry V. Bims - Exhibit A - Harry V. Bims CV			H, R, 403
416	2024-08-15	Reply Expert Report of Dr. Harry V. Bims - Exhibit B - Materials Considered			H, R, 403
417	2024-01-25	Affirmative Expert Report Stephen A. Holzen			H, MIL
418	2024-01-25	Affirmative Expert Report Stephen A. Holzen - Appendix A			H, MIL, DEM
419	2024-01-25	Affirmative Expert Report Stephen A. Holzen - Appendix B			H, MIL, DEM
420	2024-01-25	Affirmative Expert Report Stephen A. Holzen - Appendix C			H, MIL, DEM
421	2024-09-04	Affirmative Expert Report Stephen A. Holzen - Errata Sheet			H, MIL
422	2024-08-15	Reply Expert Report of Stephen A. Holzen			H, MIL
423	2024-08-15	Reply Expert Report of Stephen A. Holzen - Reply Appendix A			H, MIL, DEM
424	2024-08-15	Reply Expert Report of Stephen A. Holzen - Reply Appendix B			H, MIL, DEM
425		Reply Expert Report of Stephen A. Holzen - Reply Appendix C			H, MIL, DEM
426	2024-08-15	Reply Expert Report of Stephen A. Holzen - Reply Appendix D			H, MIL, DEM
427	2025-03-13	Supplemental Expert Report of Stephen A. Holzen			H, MIL
428	2025-03-13	Supplemental Expert Report of Stephen A. Holzen - Supplemental Appendix A			H, MIL, DEM
429	2025-03-13	Supplemental Expert Report of Stephen A. Holzen - Supplemental Appendix B			H, MIL, DEM
430	2025-03-13	Supplemental Expert Report of Stephen A. Holzen - Supplemental Appendix C			H, MIL, DEM
431	2024-07-09	Expert Report of Douglas Kidder Regarding Damages			
432	2024-07-09	Expert Report of Douglas Kidder Regarding Damages - Exhibit 1			
433	2024-07-09	Expert Report of Douglas Kidder Regarding Damages - Exhibit 2			
434	2024-07-09	Expert Report of Douglas Kidder Regarding Damages - Exhibit 3			
435	2024-07-09	Expert Report of Douglas Kidder Regarding Damages - Exhibit 4			
436	2024-07-09	Expert Report of Douglas Kidder Regarding Damages - Exhibit 5			
437	2024-07-09	Expert Report of Douglas Kidder Regarding Damages - Exhibit 6			
438	2024-07-09	Expert Report of Douglas Kidder Regarding Damages - Exhibit 7			
439	2024-07-09	Expert Report of Douglas Kidder Regarding Damages - Exhibit 8			
440	2024-01-25	Expert Report of Henry Houh, Ph.D. Regarding Invalidity of U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893			R, 403
441	2024-01-25	Expert Report of Henry Houh, Ph.D. Regarding Invalidity of U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893 - Exhibit A			R, 403
442	2024-01-25	Expert Report of Henry Houh, Ph.D. Regarding Invalidity of U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893 - Appendix A			R, 403
443	2024-08-15	Reply Expert Report of Henry Houh, Ph.D. Regarding Invalidity of U.S. Patent Nos. 9,642,017, 9,332,442, and 10.107.893			R, 403
444	2024-07-09	Rebuttal Expert Report of Henry Houh, Ph.D. Regarding Non-Infringement of U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893			R, 403
445	2024-00-00	FY 2004: Thad Gabara's Performance Review	TT-N-0024020	TT-N-0024026	A, F, H
446		Netgear Orbi Review: The Mesh Router to Beat	TT-N-0024341	TT-N-0024374	A, F, H
1-10	7/11/2023	www.tomsguide.com/us/netgear-orbi,review-4263.html	11, 002 1371	11 11 00213/1	23, 1, 11
447	2022-09-09	Broadcom BCM6710 Advanced Data Sheet	BCM0000001	BCM0000066	H, F
448		Broadcom BCM6755 Advanced Data Sheet Quad-Core ARM, Dual 11ax Wi-Fi Communications Processor	BCM0000007 BCM0000067	BCM0000291	H. F

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449	2022-07-06	Broadcom BCM6756 Advanced Data Sheet	BCM0000292	BCM0000544	H, F
450			BCM0000545	BCM0000645	H, F
451	2018-07-03	Broadcom BCM43XX/BCM47XX/BCM53XX SmartMesh Release 3 Application Note	BCM0000646	BCM0000656	H, F
452		Memorandum Order			X, R, 403
453	2023-08-02	Report and Recommendations (Magistrate Jennifer Hall)			X, R, 403, MIL
454		Declaration of Dr. Harry V. Bims, Ph.D.			Н
455	2023-04-17	Declaration of Henry Houh, Ph.D., In Support of Defendant Netgear, Inc.'s Proposed Claim Constructions			
456		[Duplicate - Deleted]			ID
457		[Duplicate - Deleted]			DD
458		Orbi Pro without Insight subscription	TT-N-0092498	TT-N-0092504	
		https://community.netgear.com/t5/Orbi-Pro-WiFi-for-Small-Business/Orbi-Pro-without-Insight-subscription/td-			
		p/2274076			
459	2023-12-11	Where Should I Place My Orbi Satellite?			
		https://kb.netgear.com/31029/Where-should-I-place-my-Orbi-satellite			
460	2023-12-11	How Do I Install My Netgear Nighthawk Mesh WiFi 6 Products?			
		https://kb.netgear.com/000061554/How-do-I-install-my-NETGEAR-Nighthawk-Mesh-WiFi-6-products			
461	2023-12-11	What Do the LEDs on My Orbi Router and Satellite Mean?			
		https://kb .netgear.com/31030/What-do-the-LEDs-on-my-Orbi-router-and-satellite-mean			
462	2023-12-11	What is Daisy Chain and How Does it Work with My Orbi WiFi System or Nighthawk Mesh System?			
		https://kb.netgear.com/000048458/What-ls-daisy-<:hain-and-how-does-it-work-wlth-my-Orbl-WIFI-System-or-			
		Nlghthawk-Mesh-System			
463	2024-01-24	Do WiFi Extenders Reduce Speed?	TT-N-0093582	T-N-0093587	
		https://findreviews.com/do-wifi-extenders-reduce-speed			
464	2024-01-24	How is an Orbi WiFi System different from an extender?	TT-N-0093591	TT-N-0093594	
		https://kb.netgear.com/31031/How-is-an-Orbi-system-different-from-an-extender			
465	2021-02-05	Netgear Orbi (RBK50) review	TT-N-0024341	TT-N-0024374	
		https://www.tomsguide.com/us/netgear-orbi,review-4263.html			
466		Qualcomm® Wi-Fi SON and distributed networking	TT-N-0026197	TT-N-0026200	
		https://web.archive.org/web/20170705180301/https://www.qualcomm.com/products/features/wifi-son			
467	2017-01-13	Qualcomm® Wi-Fi SON: The easy way to manage an ever-growing home network	TT-N-0089628	TT-N-0089628	
		https://www.youtube.com/watch?v=pr2gjK0qhrw			
468	2018-10-23	Broadcom Expands Family of Wi-Fi 6 Solutions with New Mesh Networking Platforms	TT-N-0026103	TT-N-0026104	
		https://www.broadcom.com/company/news/product-releases/41096			
469	2016-10-17	Qualcomm No more dead zones in the home: meet the NETGEAR Orbi Wi-Fi System	TT-N-0026153	TT-N-0026158	
		https://www.qualcomm.com/news/onq/2016/10/no-more-dead-zones-home-meet-netgear-orbi-wi-fi-system			
470	2016-01-04	Qualcomm Launches Wi-Fi SON (Self Organizing Network) Solutions to SimplifyWi-Fi Networking and Optimize	TT-N-0026230	TT-N-0026234	
		User Experience			
		https://www.qualcomm.com/news/releases/2016/01/qualcomm-launches-wi-fi-son-self-organizing-network-solutions	1		
		simplify-wi			
471	2019-01-07	Netgear Orbi Whole-Home Wi-Fi System to Adopt Qualcomm's Wi-Fi 6 802.11ax Platform	TT-N-0026105	TT-N-0026109	
		https://www.anandtech.com/show/13802/netgear-orbi-ax-qualcomm			
472	2024-01-29	Netgear Insight Management Solution	TT-N-0093603	TT-N-0093608	
		https://www.netgear.com/support/product/Insight.aspx			
473	2022-12-15	Netgear Orbi - WiFi System App on the App Store			
		https://apps.apple.com/us/app/netgear-orbi/id1182184397?platform=iphone			

PTX	DATED DESCRIPTION OF EXHIBITS AND WI	TNESSES	ATES NO. BATES No. (beg) (end)	
474	2020-06-09 How TriBand Wi-Fi 6 can make the "new normal" better [video] https://www.qualcomm.com/news/onq/2020/06/how-tri-band-wi-fi-6-can-make-new-normal-better	TT-N-0026159	TT-N-0026162	
475	2023-05-31 How do I update the firmware of my Orbi WiFi System? https://kb.netgear.com/000058278/How-do-I-update-the-firmware-of-my-O	rbi-WiFi-System	TT-N-0021541	
476	2024-01-29 How do I update the firmware on my WiFi Mesh or Nighthawk Mesh Exten https://kb.netgear.com/000045264/How-do-I-update-the-firmware-on-my-W	der? TT-N-0093588	TT-N-0093590	
477	2024-01-29 Where should I place my Orbi Pro satellite NETGEAR Support https://kb.netgear.com/000045858/Where-should-I-place-my-Orbi-Pro-satel	TT-N-0093760	TT-N-0093763	
478	2017-05-28 Qualcomm Unveils Mesh NetworkingPlatform and Reference Design https://www.qualcomm.com/news/releases/2017/05/qualcomm-unveils-mes design	h-networkingplatform-and-reference-	TT-N-0026184	
479	2019-03-18 Netgear Orbi Home WiFi System Review (Retested After Two Years) https://www.mbreviews.com/netgear-orbi-home-wifi-system-review/	TT-N-0026111	TT-N-0026145	
480	2015-00-00 Qualcomm ipq40x8/ipq40x9 Products https://www.qualcomm.com/media/documents/files/ipq40x8-ipq40x9-products	TT-N-0026201	TT-N-0026201	
481	2023-08-14 Wikipedia Qualcomm Wi-Fi SON https://en.wikipedia.org/wiki/Qualcomm_Wi-Fi_SON	TT-N-0026110	TT-N-0026110	
482	2023-04-12 AXE11000 Mesh WiFi System (RBKE963B), Orbi™ 960 Series Quad-Ban Gig Port, 3-Pack, Black Edition, 1-year NETGEAR Armor included https://www.netgear.com/home/wifi/mesh/rbke963b	d WiFi 6E Mesh System, 10.8Gbps, 10 TT-N-0024451	TT-N-0024465	
483	2024-01-24 Orbi 970 3-Pack WiFi 7 Mesh System RBE973S – Exclusive - Orbi 970 Se 27Gbps, 3-Pack, 1-year NETGEAR Armor included https://www.netgear.com/home/wifi/mesh/rbe973s/?cid=us-best-wifi6-Shoppingcpc&utm_source=shopping&utm_medium=cpc&utm_campaign=shoppingcpc&gad_source=1&gclid=Cj0KCQiAh8OtBhCQARIsAIkWb692uLdImeHSUqxPobmj0TunsaAvlNEALw_wcB	eus-best-wifi6-	TT-N-0093678	
484	2023-12-15 Steve L. Gielty Deposition Transcript (at 165:7-168:3)			
485	2016-03-28 Wi-Fi SON and why it's important https://www.rcrwireless.com/20160328/network-infrastructure/wi-fi/wi-fi-stag99	on-important-tag17-	TT-N-0026213	
486	Various Data Sheets, User Manuals and Seup Guides	NETGEAR-TRACK-000	001 NETGEAR-TRACK-006084	C/D, BATES
487	Netgear Orbi Whole Home AC2200 Tri-band WiFi System Data Sheet	NETGEAR-TRACK-000		,
488	[Duplicate - Deleted]			C/D, BATES
489	[Duplicate - Deleted]			C/D, BATES
490	Netgear Orbi Quick Start Guide Model CBK40	NETGEAR-TRACK-000	005 NETGEAR-TRACK-000006	C/D, BATES
491	Netgear Orbi Whole Home AC2200 Tri-band WiFi System Data Sheet CBK	X43 NETGEAR-TRACK-000	NETGEAR-TRACK-000111	
492	Netgear Orbi WiFi 6 DOCSIS 3.1 Mesh WiFi System with Built-in Cable M			
493	Netgear Orbi WiFi 6 DOCSIS® 3.1 Mesh WiFi System with Built-in Cable	Modem Data Sheet CBK753 NETGEAR-TRACK-000	NETGEAR-TRACK-000243	
494	2021-08-00 Nighthawk Mesh Wi-Fi 6 System	NETGEAR-TRACK-000	808 NETGEAR-TRACK-000892	
495	Netgear Nighthawk Mesh WiFi 6 System MK72	NETGEAR-TRACK-001		
496	2021 Nighthawk Tri-band Mesh Wi-Fi 6 System Data Sheet MK83	NETGEAR-TRACK-001		
497	Netgear Orbi Whole Home AC1200 Mesh WiFi System Data Sheet	NETGEAR-TRACK-002		
498	Netgear Orbi Quad-Band Mesh WiFi 6E System Data Sheet RBKE963	NETGEAR-TRACK-003		
499	2019-01-00 Netgear Business Quick Start Orbi Pro Router and Sattelite Setup	NETGEAR-TRACK-004		
500	Netgear Business Orbi Pro WiFi 6 - AX6000 Tri-band WiFi System Data Sl	heet SXK80 NETGEAR-TRACK-005	878 NETGEAR-TRACK-005880	

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501		Excel - Orbi Desktop Software Features	NETGEAR-TRACK-006085	NETGEAR-TRACK-006325	
502	2016-07-	16 Netgear Orbi Desktop LED Definition V1.11.1	NETGEAR-TRACK-006086	NETGEAR-TRACK-006102	
503		Excel - Orbi Desktop/Orbi+	NETGEAR-TRACK-006103	NETGEAR-TRACK-006103	
504		Excel - Orbi Wall Plug 2x2	NETGEAR-TRACK-006104	NETGEAR-TRACK-006104	
505		Excel - Orbi Mini Router 2x2	NETGEAR-TRACK-006105	NETGEAR-TRACK-006105	
506		Excel - Revision History Orbi Business	NETGEAR-TRACK-006106	NETGEAR-TRACK-006106	
507		Excel - Orbi Desktop Base & Satellite	NETGEAR-TRACK-006107	NETGEAR-TRACK-006107	
508		Excel - Revision History Outdoor Orbi Satellite	NETGEAR-TRACK-006108	NETGEAR-TRACK-006108	
509		Excel - Orbi Desktop Base & Satellite	NETGEAR-TRACK-006109	NETGEAR-TRACK-006109	
510		Excel - Orbi Micro Router	NETGEAR-TRACK-006110	NETGEAR-TRACK-006110	
511		Excel - DOCSIS 3.0 24x8 Cable Orbi Router	NETGEAR-TRACK-006111	NETGEAR-TRACK-006111	
512		Excel - Voice Orbi Use Cases	NETGEAR-TRACK-006112	NETGEAR-TRACK-006112	
513		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX	NETGEAR-TRACK-006113	NETGEAR-TRACK-006113	
514		Excel - WAC540 PRD	NETGEAR-TRACK-006114	NETGEAR-TRACK-006114	
515		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006115	NETGEAR-TRACK-006115	
516		Excel - Revision History	NETGEAR-TRACK-006116	NETGEAR-TRACK-006116	
517		Excel - Revision History - Rtbd Baseline	NETGEAR-TRACK-006117	NETGEAR-TRACK-006117	
518		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006118	NETGEAR-TRACK-006118	
519		Excel - Revision History	NETGEAR-TRACK-006119	NETGEAR-TRACK-006119	
520		Chart: Software Features	NETGEAR-TRACK-006120	NETGEAR-TRACK-006120	
521		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006121	NETGEAR-TRACK-006121	
522		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006122	NETGEAR-TRACK-006122	
523		Excel - Revision History PRD	NETGEAR-TRACK-006123	NETGEAR-TRACK-006123	
524		Excel - Revision History PRD	NETGEAR-TRACK-006124	NETGEAR-TRACK-006124	
525		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006125	NETGEAR-TRACK-006125	
526		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006126	NETGEAR-TRACK-006126	
527		Excel - LTE CAT 6 Orbi Router	NETGEAR-TRACK-006127	NETGEAR-TRACK-006127	
528		Excel - Revision History PRD	NETGEAR-TRACK-006128	NETGEAR-TRACK-006128	
529		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006129	NETGEAR-TRACK-006129	
530		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006130	NETGEAR-TRACK-006130	
531		Excel - Revision History PRD	NETGEAR-TRACK-006131	NETGEAR-TRACK-006131	
532		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006132	NETGEAR-TRACK-006132	
533		Excel - Revision History Rtbd Baseline	NETGEAR-TRACK-006133	NETGEAR-TRACK-006133	
534		Chart	NETGEAR-TRACK-006134	NETGEAR-TRACK-006134	I
535		Excel - Revision History PRD	NETGEAR-TRACK-006135	NETGEAR-TRACK-006135	
536		Excel - 2021 Device Guidance 1.0 Qualit	NETGEAR-TRACK-006136	NETGEAR-TRACK-006136	
537	2020-04-		NETGEAR-TRACK-006137	NETGEAR-TRACK-006313	
538		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006314	NETGEAR-TRACK-006314	
539		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006315	NETGEAR-TRACK-006315	
540		Excel - Revision History PRD - Short Form	NETGEAR-TRACK-006316	NETGEAR-TRACK-006316	
541		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006317	NETGEAR-TRACK-006317	
542		Revision History Hardware Requirements	NETGEAR-TRACK-006318	NETGEAR-TRACK-006318	
543		Request for Conditional Release	NETGEAR-TRACK-006319	NETGEAR-TRACK-006319	
544		Excel - Revision History RBK760 Series	NETGEAR-TRACK-006320	NETGEAR-TRACK-006320	
545		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006321	NETGEAR-TRACK-006321	
546		Excel - Revision History PRD	NETGEAR-TRACK-006322	NETGEAR-TRACK-006322	
547		Excel - DOC-11351 Rev 1 FORM, COMPATIBILITY MATRIX Instructions	NETGEAR-TRACK-006323	NETGEAR-TRACK-006323	

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
548		Excel - Revision History Rtbd Baseline	NETGEAR-TRACK-006324	NETGEAR-TRACK-006324	OBJECTIONS
549		Chart: Software Features	NETGEAR-TRACK-000324 NETGEAR-TRACK-006325	NETGEAR-TRACK-006324 NETGEAR-TRACK-006325	+
550		MK83 vs. MK93 Nighthawk Tri-Band Mesh WiFi 6 System	NETGEAR-TRACK-006325 NETGEAR-TRACK-006326	NETGEAR-TRACK-006323 NETGEAR-TRACK-006331	+
	2010.02.2	0 Easy Mesh 11AX System P1 Exit	NETGEAR-TRACK-006350	NETGEAR-TRACK-006380	
551 552	2019-03-20	MK73 MR1v1 .0.2.26 Go/NoGo meeting			
553	2022 07 2	8 Netgear MK9x P3 Exit	NETGEAR-TRACK-006381 NETGEAR-TRACK-006385	NETGEAR-TRACK-006384 NETGEAR-TRACK-006422	
554		5 Netgear MK9x P1 Exit - Follow up 6 Netgear MK9x P1 Exit	NETGEAR-TRACK-006423	NETGEAR-TRACK-006427	
555			NETGEAR-TRACK-006428	NETGEAR-TRACK-006469	
556		9 Tri Band Nighthawk Mesh P0 Exit	NETGEAR-TRACK-006470	NETGEAR-TRACK-006485	
557		1 Tri Band Nighthawk Mesh P0 Exit	NETGEAR-TRACK-006486	NETGEAR-TRACK-006515	
558		2 Tri Band Nighthawk Mesh P2 Exit	NETGEAR-TRACK-006516	NETGEAR-TRACK-006526	
559		3 Mx80 Tri-band Nighthawk Mesh P3 Exit	NETGEAR-TRACK-006527	NETGEAR-TRACK-006566	
560		6 MX60 Nighthawk WiFi 6 Mesh System P2 Exit	NETGEAR-TRACK-006567	NETGEAR-TRACK-006577	
561		8 Nighhawk Mesh WiFi 6 System P3 Exit, Mx60 (MK63/MK62/MR60/MS60)	NETGEAR-TRACK-006578	NETGEAR-TRACK-006613	
562		2 Tri Band Nighthawk Mesh 6E System P0 Exit	NETGEAR-TRACK-006614	NETGEAR-TRACK-006634	
563		3 MK7x Dual-Band Nighthawk Mesh WiFi 6 System P0/P1 Exit	NETGEAR-TRACK-006635	NETGEAR-TRACK-006669	
564	2021-11-2	9 Netgear Mk7x Dual-Band Nighthawk Mesh Wi-Fi 6 System P2 Exit	NETGEAR-TRACK-006670	NETGEAR-TRACK-006681	
565	2023-02-2	4 Netgear MK9x P2 Exit	NETGEAR-TRACK-006682	NETGEAR-TRACK-006692	
566		9 MK7x Dual-Band Nighthawk Mesh WiFi 6 System P3 Exit	NETGEAR-TRACK-006693	NETGEAR-TRACK-006726	
567	2018-11-1	4 Netgear Second Generation Orbi Products P0 & P1 Exit	NETGEAR-TRACK-006727	NETGEAR-TRACK-006764	
568		0 Netgear Second Generation Orbi Products Re-P1 Exit	NETGEAR-TRACK-006765	NETGEAR-TRACK-006800	
569	2016-12-1	6 Netgear Business Orbi P0 Exit	NETGEAR-TRACK-006801	NETGEAR-TRACK-006814	
570		5 Netgear Business Orbi P1 Exit	NETGEAR-TRACK-006815	NETGEAR-TRACK-006839	
571	2017-03-0	1 Netgear Cable Orbi DOCSIS 3.0 Orbi Cable Router	NETGEAR-TRACK-006840	NETGEAR-TRACK-006853	
572	2017-06-0	7 Netgear Cable Orbi DOCSIS 3.0 Orbi Cable Router	NETGEAR-TRACK-006854	NETGEAR-TRACK-006879	
573		8 Netgear - CBK40 - Cable Orbi P3 Exit	NETGEAR-TRACK-006880	NETGEAR-TRACK-006917	
574	2017-05-29	9 Netgear Micro Orbi P0 Exit	NETGEAR-TRACK-006918	NETGEAR-TRACK-006930	
575	2017-05-2	4 Netgear RBR30 "Micro" Orbi P1 Exit	NETGEAR-TRACK-006931	NETGEAR-TRACK-006953	
576	2017-05-2	4 Netgear RBR30 "Micro" Orbi P1 Exit	NETGEAR-TRACK-006954	NETGEAR-TRACK-006976	
577	2017-08-3	1 Netgear RBK 44: Micro Orbi Bundle P2 Exit	NETGEAR-TRACK-006977	NETGEAR-TRACK-006986	
578		6 Netgear 11AC Mesh System P0 Exit	NETGEAR-TRACK-006987	NETGEAR-TRACK-007004	
579	2014-04-2	9 Netgear Hyper-Fi P0 Exit	NETGEAR-TRACK-007005	NETGEAR-TRACK-007018	
580	2014-10-0	7 Netgear Orbi P1 Exit	NETGEAR-TRACK-007019	NETGEAR-TRACK-007039	
581	2015-10-0	7 Netgear Orbi + P0 Exit	NETGEAR-TRACK-007072	NETGEAR-TRACK-007091	
582		2 Orbi + P1 Exit	NETGEAR-TRACK-007092	NETGEAR-TRACK-007121	
583		8 Orbi Dual-Band 11ac Mesh System P3 Exit	NETGEAR-TRACK-007122	NETGEAR-TRACK-007160	
584		0 Netgear Orbi Dual-Band 11ac Mesh System P1 Exit	NETGEAR-TRACK-007161	NETGEAR-TRACK-007189	
585		7 Netgear Orbi Dual-Band 11ac Mesh System P2 Exit	NETGEAR-TRACK-007190	NETGEAR-TRACK-007203	
586		2 Netgear RBXD1003 - Orbi Desktop P0 Exit	NETGEAR-TRACK-007204	NETGEAR-TRACK-007221	
587		6 Netgear RBK50 - Orbi Desktop P1 Exit	NETGEAR-TRACK-007222	NETGEAR-TRACK-007251	
588		7 Netgear Orbi AX P0 Exit	NETGEAR-TRACK-007252	NETGEAR-TRACK-007265	
589		Netgear Orbi Desktop - RBK53, RBR50. RBR50 and RBS50 Mini P4 Exit	NETGEAR-TRACK-007266	NETGEAR-TRACK-007270	
590		3 Netgear - RBK50 - Orbi Kit of Two. RBK53 - Orbi Kit of Three, RBS50 - Orbi Satellite Add-on	NETGEAR-TRACK-007271	NETGEAR-TRACK-007280	
591		Netgear Orbi Desktop RBK50, RBR50, RBK53, and RBS50 P3 Exit	NETGEAR-TRACK-007281	NETGEAR-TRACK-007318	
592		9 Netgear RBK50v2 P1 Exit	NETGEAR-TRACK-007319	NETGEAR-TRACK-007342	
593		1 Netgear Orbi Desktop v2 P2 Exit	NETGEAR-TRACK-007343	NETGEAR-TRACK-007355	

PTX	DATED D	ESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
594	2018-09-12 Netgear Orbi/Extender Outdoor U	Universal Mode S3 Exit	NETGEAR-TRACK-007356	NETGEAR-TRACK-007377	
595	2017-09-29 Orbi Mini P4 Exit		NETGEAR-TRACK-007378	NETGEAR-TRACK-007380	
596	2016-08-03 Netgear Orbi Mini Router P0 Ex	t	NETGEAR-TRACK-007406	NETGEAR-TRACK-007418	
597	2017-06-14 Netgear SRK60 and SRS60 - Orb	i Pro P2 Exit	NETGEAR-TRACK-007419	NETGEAR-TRACK-007427	
598	2017-01-17 Netgear Voice Orbi Satellite Re-	P1 Exit	NETGEAR-TRACK-007428	NETGEAR-TRACK-007454	
599	2017-09-27 Netgear Voice Orbi Satellite P1 I	Exit	NETGEAR-TRACK-007455	NETGEAR-TRACK-007481	
600	2017-09-29 Netgear Orbi Wall Plug Mini-P4	Exit	NETGEAR-TRACK-007482	NETGEAR-TRACK-007484	
601	2016-04-13 Netgear Orbi Wall-Plug P0 Exit		NETGEAR-TRACK-007485	NETGEAR-TRACK-007500	
602	2016-05-18 Netgear RBW50 - Orbi Wall Plu	g P1 Exit	NETGEAR-TRACK-007501	NETGEAR-TRACK-007526	
603	2018-06-13 Netgear Outdoor Extender - Orbi	Universal Mode S1 Exit	NETGEAR-TRACK-007527	NETGEAR-TRACK-007548	
604	2016-12-21 Netgear Outdoor Orbi P0 Exit		NETGEAR-TRACK-007549	NETGEAR-TRACK-007565	
605	2017-01-03 Netgear Outdoor Orbi P1 Exit		NETGEAR-TRACK-007566	NETGEAR-TRACK-007593	
606	Netgear RBE 79x P0 Exit		NETGEAR-TRACK-007631	NETGEAR-TRACK-007647	
607	2022-01-00 Netgear RBK880 P0 Exit		NETGEAR-TRACK-007648	NETGEAR-TRACK-007663	
608	2021-08-00 Netgear RBK952 – WiFi 6 10G 0	Orbi	NETGEAR-TRACK-007664	NETGEAR-TRACK-007680	
609	2020-04-00 Netgear RBS750Y - AX Outdoor	Orbi P0 Exit	NETGEAR-TRACK-007681	NETGEAR-TRACK-007697	
610	2020-12-23 Netgear RBx450 Series P0 Exit		NETGEAR-TRACK-007698	NETGEAR-TRACK-007712	
611	04/00/2020 Netgear Orbi RBK650 Series P0	Exit	NETGEAR-TRACK-007713	NETGEAR-TRACK-007732	
612	2020-10-28 Netgear RBK760 Series P0 Exit		NETGEAR-TRACK-007733	NETGEAR-TRACK-007748	
613	2020-07-15 Netgear Orbi RBK960 Series P0	Exit	NETGEAR-TRACK-007764	NETGEAR-TRACK-007781	
614	2022-05-00 Netgear WiFi7 Orbi 7 Orbi 8 P0	Exit	NETGEAR-TRACK-007782	NETGEAR-TRACK-007801	
615	2023-01-00 Netgear RBE77x v2 Wifi7 Orbi 7	1	NETGEAR-TRACK-007802	NETGEAR-TRACK-007817	
616	2022-04-00 Netgear WiFi7 Orbi7 P0 Exit		NETGEAR-TRACK-007818	NETGEAR-TRACK-007836	
617	2019-01-23 Netgear RBS40v- 200 P1 Exit Se	ries P1 Exit	NETGEAR-TRACK-007837	NETGEAR-TRACK-007867	
618	2021-11-00 Netgear RBK660 Series P1 Exit		NETGEAR-TRACK-007868	NETGEAR-TRACK-007898	
619	2022-02-00 Netgear RBK780 P1 Exit		NETGEAR-TRACK-007899	NETGEAR-TRACK-007930	
620	2022-01-00 Netgear RBK860 P1 Exit		NETGEAR-TRACK-007931	NETGEAR-TRACK-007962	
621	Netgear RBR860 and RBRE960	for VOCUS P1 Exit	NETGEAR-TRACK-007963	NETGEAR-TRACK-007994	
622	2020-11-00 Netgear RBS750Y - AX Outdoor		NETGEAR-TRACK-007995	NETGEAR-TRACK-008022	
623	2020-03-04 Netgear RBx350 - Orbi AX Dua	Ban P1 Exit	NETGEAR-TRACK-008023	NETGEAR-TRACK-008057	
624	2021-08-00 Netgear RBK650 Series P1 Exit		NETGEAR-TRACK-008058	NETGEAR-TRACK-008086	
625	2019-04-24 Netgear Second Generation Orbi	Products - RBx120 Series P1 Exit	NETGEAR-TRACK-008087	NETGEAR-TRACK-008118	
626	2021-02-04 Netgear RBx760 (was RBx550)	Series	NETGEAR-TRACK-008119	NETGEAR-TRACK-008147	
627	2020-08-12 Netgear Orbi RBx960 Series P1	Exit	NETGEAR-TRACK-008148	NETGEAR-TRACK-008185	
628	2020-08-12 Netgear Orbi RBx960 Series P1	Exit	NETGEAR-TRACK-008186	NETGEAR-TRACK-008223	
629	2021-05-26 Netgear Orbi RBx780 Series P1	Exit	NETGEAR-TRACK-008224	NETGEAR-TRACK-008252	
630	Netgear WiFi7 Orbi 10 P1 Exit		NETGEAR-TRACK-008253	NETGEAR-TRACK-008287	
631	2022-11-00 Netgear Wifi7 Orbi 7 P1 Exit		NETGEAR-TRACK-008288	NETGEAR-TRACK-008320	
632	2022-06-00 Netgear Wifi7 Orbi9 P1 Exit		NETGEAR-TRACK-008321	NETGEAR-TRACK-008361	
633	2019-06-23 Netgear RBx850 Series - 11 AX	Orbi P2 Exit	NETGEAR-TRACK-008362	NETGEAR-TRACK-008372	
634	2018-07-02 Netgear - Orbi Voice P2 Exit		NETGEAR-TRACK-008373	NETGEAR-TRACK-008383	
635	2023-04-00 Netgear - RBE97x - WiFi7 Orbi9	P2 Exit	NETGEAR-TRACK-008384	NETGEAR-TRACK-008396	
636	2022-06-00 Netgear - RBK86x P2 Exit		NETGEAR-TRACK-008397	NETGEAR-TRACK-008407	
637	Netgear - RBR860 for 2Degrees	A /	NETGEAR-TRACK-008408	NETGEAR-TRACK-008421	
638	2020-05-00 Netgear - RBX350 Series P2 Exi		NETGEAR-TRACK-008422	NETGEAR-TRACK-008434	

### BATES NO. BATES NO. **NETGEAR'S** PTX DATED DESCRIPTION OF EXHIBITS AND WITNESSES (beg) (end) **OBJECTIONS** 639 2019-12-11 RBX750 Series P2 Exit NETGEAR-TRACK-008435 NETGEAR-TRACK-008445 640 2021-10-00 Netgear - RBx760 Series P2 Exit NETGEAR-TRACK-008446 NETGEAR-TRACK-008459 641 0000-08-00 Netgear - RBKE96X P2 Exit NETGEAR-TRACK-008471 NETGEAR-TRACK-008460 642 2021-11-00 Netgear - Orbi RBx960 Series P3 Exit - Follow up NETGEAR-TRACK-008472 NETGEAR-TRACK-008479 643 2018-08-15 Netgear - Orbi Voice P3 Exit NETGEAR-TRACK-008480 NETGEAR-TRACK-008511 644 2023-07-05 Netgear - RBE97x - WiFi7 Orbi9 P3 Exit NETGEAR-TRACK-008512 NETGEAR-TRACK-008557 645 Netgear - RBK86x Series P3 Exit NETGEAR-TRACK-008558 NETGEAR-TRACK-008592 2020-08-00 Netgear - RBx350 - Orbi AX Dual Band P3 Exit 646 NETGEAR-TRACK-008593 NETGEAR-TRACK-008643 647 2018-12-12 Netgear - RBK50v2 Orbi Desktop P3 Exit NETGEAR-TRACK-008644 NETGEAR-TRACK-008680 648 2021-09-00 Netgear - RBK653-100NAS P3 Exit NETGEAR-TRACK-008681 NETGEAR-TRACK-008717 2020-03-11 Netgear - RBx750 Series P3 Exit 649 NETGEAR-TRACK-008718 NETGEAR-TRACK-008760 650 2021-12-00 Netgear - RBx760 Series P3 Exit NETGEAR-TRACK-008761 NETGEAR-TRACK-008808 651 2019-09-11 Netgear - RBx850 Series - Second Generation Orbi Products P3 Exit NETGEAR-TRACK-008809 NETGEAR-TRACK-008848 652 2021-09-00 Netgear - Orbi RBx960 Series P3 Exit NETGEAR-TRACK-008849 NETGEAR-TRACK-008885 653 2023-04-00 Netgear - Product Release Review RBR860 2Degrees NETGEAR-TRACK-008886 NETGEAR-TRACK-008897 654 2017-09-13 Netgear - RBK44: Micro Orbi Bundle P3 Exit NETGEAR-TRACK-008898 NETGEAR-TRACK-008926 655 2017-01-18 Netgear - RBK30 Orbi Wall Plug P2 NETGEAR-TRACK-008927 NETGEAR-TRACK-008936 656 2017-02-22 Netgear - RBK30/RBK33/RBW30 Orbi Wall-Plug and bundles P3 Exit NETGEAR-TRACK-008937 NETGEAR-TRACK-008969 657 2017-01-18 Netgear - RBK40 Orbi Mini P2 Exit NETGEAR-TRACK-008970 NETGEAR-TRACK-008979 658 2017-02-22 Netgear - RBK40/RBK43/RBS40 Orbi Mini and Bundles NETGEAR-TRACK-008980 NETGEAR-TRACK-009011 659 Netgear Agenda NETGEAR-TRACK-009012 NETGEAR-TRACK-009024 660 2022-04-00 Netgear - RBK763S Post Mortem NETGEAR-TRACK-009025 NETGEAR-TRACK-009036 661 2017-09-28 Netgear - RBS50Y: Orbi Outdoor P2 Exit NETGEAR-TRACK-009037 NETGEAR-TRACK-009046 662 2017-12-06 Netgear - RBS50Y: Orbi Outdoor P3 Exit NETGEAR-TRACK-009047 NETGEAR-TRACK-009076 663 2019-09-04 Netgear - Second Generation Orbi Products - RBx750 Series Re-P1 Exit NETGEAR-TRACK-009077 NETGEAR-TRACK-009110 664 2023-03-00 Netgear - WiFi Orbi 7 RE-P1 Exit NETGEAR-TRACK-009111 NETGEAR-TRACK-009144 665 2022-10-00 Netgear - WiFi7 Orbi9 Re-P1 Exit NETGEAR-TRACK-009145 NETGEAR-TRACK-009188 666 2021-09-00 Netgear - RBk650 Series Re-P1 Exit NETGEAR-TRACK-009189 NETGEAR-TRACK-009221 667 2021-01-00 Netgear - Orbi RBx960 Series Re-P1 Exit NETGEAR-TRACK-009222 NETGEAR-TRACK-009268 668 2017-04-19 Netgear - Voice and IoT Orbi P0 Exit NETGEAR-TRACK-009269 NETGEAR-TRACK-009282 669 2017-09-27 Netgear - Voice and IoT Orbi P1 Exit NETGEAR-TRACK-009283 NETGEAR-TRACK-009309 670 2017-09-27 Netgear - Voice and IoT Orbi P1 Exit NETGEAR-TRACK-009310 NETGEAR-TRACK-009336 671 2022-05-00 Netgear - Wifi7 Orbi 7 Orbi 8 P0 Exit NETGEAR-TRACK-009337 NETGEAR-TRACK-009356 672 Netgear - Orbi Tri band 4G LTE Advanced Wi-Fi Router NETGEAR-TRACK-009375 NETGEAR-TRACK-009379 673 2020-05-20 Netgear - MK62 AU Box NETGEAR-TRACK-009380 NETGEAR-TRACK-009381 674 2020-05-29 Netgear - MK62 UK Box NETGEAR-TRACK-009382 NETGEAR-TRACK-009383 675 2021-09-17 Netgear - MK62 NA Box NETGEAR-TRACK-009384 NETGEAR-TRACK-009385 676 2020-05-20 Netgear - MK63 AU Box NETGEAR-TRACK-009386 NETGEAR-TRACK-009387 677 2020-05-29 Netgear - MK63 UK Box NETGEAR-TRACK-009388 NETGEAR-TRACK-009389 678 2021-09-21 Netgear - MK63 CCNA Box NETGEAR-TRACK-009390 NETGEAR-TRACK-009391 679 2021-10-08 Netgear - MK63S NA Box NETGEAR-TRACK-009392 NETGEAR-TRACK-009393 680 2021-10-13 Netgear - MK6W NA Box NETGEAR-TRACK-009394 NETGEAR-TRACK-009395 681 2022-08-22 Netgear - MK72 NA Box NETGEAR-TRACK-009396 NETGEAR-TRACK-009397 682 2022-11-01 Netgear - MK72 AP Box NETGEAR-TRACK-009398 NETGEAR-TRACK-009399 683 2023-03-10 Netgear - MK73S EU Box NETGEAR-TRACK-009400 NETGEAR-TRACK-009401 684 2023-02-23 Netgear - MK73S AP Box NETGEAR-TRACK-009402 NETGEAR-TRACK-009403 685 2020-08-05 Netgear - MK82 NA Box NETGEAR-TRACK-009404 NETGEAR-TRACK-009405

PTX	DATED DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
686	2020-09-02 Netgear - MK82 AU Box	NETGEAR-TRACK-009406	NETGEAR-TRACK-009407	
687	2020-08-24 Netgear - MK82 NA Box	NETGEAR-TRACK-009408	NETGEAR-TRACK-009409	
688	2020-09-03 Netgear - MK83 AU Box	NETGEAR-TRACK-009410	NETGEAR-TRACK-009411	
689	2021-08-04 Netgear - MK83 NA Box	NETGEAR-TRACK-009412	NETGEAR-TRACK-009413	
690	2021-04-08 Netgear - MS60 NA Box	NETGEAR-TRACK-009414	NETGEAR-TRACK-009415	
691	2022-04-22 Netgear - MS70 NA Box	NETGEAR-TRACK-009416	NETGEAR-TRACK-009417	
692	2023-05-16 Netgear - MS70 AP Box	NETGEAR-TRACK-009418	NETGEAR-TRACK-009418	
693	2020-08-17 Netgear - MS80 NA Box	NETGEAR-TRACK-009419	NETGEAR-TRACK-009420	
694	2021-07-21 Netgear - 752 NA Box	NETGEAR-TRACK-009421	NETGEAR-TRACK-009422	
695	2021-05-18 Netgear - NBR750 Bell CA Box	NETGEAR-TRACK-009423	NETGEAR-TRACK-009424	
696	2021-08-31 Netgear - NBR750 11NA Box	NETGEAR-TRACK-009425	NETGEAR-TRACK-009426	
697	2020-05-13 Netgear - RBK12 NA Box	NETGEAR-TRACK-009427	NETGEAR-TRACK-009428	
698	Netgear - Orbi Mesh Wi-Fi System (2-Pack) Rbk12 Messaging Brief	NETGEAR-TRACK-009429	NETGEAR-TRACK-009437	
699	Netgear - Orbi Mesh WiFi System (3-pack) RBK13 Messaging Brief	NETGEAR-TRACK-009444	NETGEAR-TRACK-009452	
700	Netgear - Orbi Mesh WiFi System (4-pack) RBK14 Messaging Brief	NETGEAR-TRACK-009459	NETGEAR-TRACK-009467	
701	Netgear - RBK14 Data Sheet	NETGEAR-TRACK-009468	NETGEAR-TRACK-009471	
702	Netgear - RBK20 GR Box	NETGEAR-TRACK-009472	NETGEAR-TRACK-009473	
703	Netgear - RBK20 FR Box	NETGEAR-TRACK-009474	NETGEAR-TRACK-009475	
704	Netgear - RBK20 AU Box	NETGEAR-TRACK-009476	NETGEAR-TRACK-009477	
705	Netgear - RBK20 UK Box	NETGEAR-TRACK-009478	NETGEAR-TRACK-009479	
706	Netgear - RBK20W NA Box	NETGEAR-TRACK-009480	NETGEAR-TRACK-009481	
707	Netgear - RBK22 CCNA Box	NETGEAR-TRACK-009482	NETGEAR-TRACK-009483	
708	Netgear - RBK23 NA Box	NETGEAR-TRACK-009484	NETGEAR-TRACK-009485	
709	Netgear - Orbi RBK23 Messaging Brief	NETGEAR-TRACK-009486	NETGEAR-TRACK-009488	
710	Netgear - RBK23 Datasheet	NETGEAR-TRACK-009489	NETGEAR-TRACK-009492	
711	Netgear - RBK23W NA Box	NETGEAR-TRACK-009493	NETGEAR-TRACK-009494	
712	Netgear - Orbi RBK23W Messaging Brief	NETGEAR-TRACK-009495	NETGEAR-TRACK-009497	
713	Netgear - RBK23W Datasheet	NETGEAR-TRACK-009498	NETGEAR-TRACK-009501	
714	Netgear - RBK352 NA Box	NETGEAR-TRACK-009502	NETGEAR-TRACK-009503	
715	Netgear - RBK352 AU Box	NETGEAR-TRACK-009504	NETGEAR-TRACK-009505	
716	Netgear - RBK353 NA Box	NETGEAR-TRACK-009506	NETGEAR-TRACK-009507	
717	Netgear - RBK353AU Box	NETGEAR-TRACK-009508	NETGEAR-TRACK-009509	
718	Netgear - RBK43S NA Box	NETGEAR-TRACK-009510	NETGEAR-TRACK-009511	
719	Netgear - RBK50v2 CN Box	NETGEAR-TRACK-009512	NETGEAR-TRACK-009513	
720	Netgear - RBK50v2 VZNA Box	NETGEAR-TRACK-009514	NETGEAR-TRACK-009515	
721	Netgear - RBK50v2 RDQA 3.5A Box	NETGEAR-TRACK-009516	NETGEAR-TRACK-009517	
722	Netgear - RBK50v2 NA Box	NETGEAR-TRACK-009518	NETGEAR-TRACK-009519	
723	Netgear - RBK50v2 AU Box	NETGEAR-TRACK-009520	NETGEAR-TRACK-009521	
724	Netgear - RBK50v2 UK Box	NETGEAR-TRACK-009522	NETGEAR-TRACK-009523	
725	Netgear - RBK53 AU Box	NETGEAR-TRACK-009524	NETGEAR-TRACK-009525	
726	Netgear - RBK53v2 AU Box	NETGEAR-TRACK-009526	NETGEAR-TRACK-009527	
727	Netgear - RBK53v2 UK Box	NETGEAR-TRACK-009528	NETGEAR-TRACK-009529	
728	Netgear - RBK53v2 NA Box	NETGEAR-TRACK-009530	NETGEAR-TRACK-009531	
729	Netgear - RBK653 NA Box	NETGEAR-TRACK-009532	NETGEAR-TRACK-009533	
730	Netgear - RBK653 EN_CNFR Box	NETGEAR-TRACK-009534	NETGEAR-TRACK-009535	
731	Netgear - Orbi RBS20 Messaging Brief	NETGEAR-TRACK-009637	NETGEAR-TRACK-009640	
732	Netgear - Orbi RBS40 Messaging Brief	NETGEAR-TRACK-009653	NETGEAR-TRACK-009656	

PTX	DATED DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
733	Netgear - Orbi Voice RBS40V-200NAS Messaging Brief	NETGEAR-TRACK-009666	NETGEAR-TRACK-009673	
734	Netgear - Orbi Outdoor Satellite Messaging Brief	NETGEAR-TRACK-009678	NETGEAR-TRACK-009684	
735	Netgear - Orbi RBW30 Messaging Brief	NETGEAR-TRACK-009731	NETGEAR-TRACK-009735	
736	Excel - 1/21 - Orbi WiFi 6 Survey - AM	NETGEAR-TRACK-009761	NETGEAR-TRACK-009761	H, R, M
737	2014-02-06 Settlement And License Agreement between NETGEAR and Innovatio Management, LLC	NETGEAR-TRACK-009762	NETGEAR-TRACK-009781	
738	2015-09-25 Netgear Master Services Agreement	NETGEAR-TRACK-009782	NETGEAR-TRACK-009791	
739	2016-04-20 Settlement Agreement Between Wetro LAN and Netgear	NETGEAR-TRACK-009792	NETGEAR-TRACK-009805	
740	2019-11-25 Settlement and Patent License Agreement between Modern Telecom Systems LLC and Netge	ar, Inc. NETGEAR-TRACK-009806	NETGEAR-TRACK-009817	
741	2019-11-25 Settlement and License Agreement between Wireless Transport LLC and Netgear, Inc.	NETGEAR-TRACK-009818	NETGEAR-TRACK-009831	
742	2021/2022 - Orbi WiFi 6E + Orbi WiFi 6 Survey	NETGEAR-TRACK-009832	NETGEAR-TRACK-009832	H, R, M
743	2022-01-20 Settlement and Patent License Agreement between Netgear, Inc. and Hera Wireless S.A., Aeg Limited and Sisvel International S.A.	is 11 S.A., Sisvel UK NETGEAR-TRACK-009833	NETGEAR-TRACK-009846	
744	Excel - 2022March - Orbi WiFi 6E + Orbi WiFi 6 Survey	NETGEAR-TRACK-009847	NETGEAR-TRACK-009847	H, R, M
745	2021-08-21 Settlement and Non-Exclusive Patent License Agreement between 2BCom, LLC and Netgear	, Inc. NETGEAR-TRACK-009848	NETGEAR-TRACK-009861	
746	Excel - BrianA Orbi Pro Purchase Usage	NETGEAR-TRACK-009863	NETGEAR-TRACK-009863	
747	Excel - Cable Modem/Cable Modem Router (US) - GJ	NETGEAR-TRACK-009864	NETGEAR-TRACK-009864	H, R, M
748	Excel - Cable Survey	NETGEAR-TRACK-009865	NETGEAR-TRACK-009865	H, R, M
749	2018-10-24 Settlement and License Agreement between BE Labs and Netgear, Inc.	NETGEAR-TRACK-009866	NETGEAR-TRACK-009875	
750	2015-11-12 Patents in Suit Settlement Agreement	NETGEAR-TRACK-009876	NETGEAR-TRACK-009885	
751	Excel - Gaming Router	NETGEAR-TRACK-009886	NETGEAR-TRACK-009886	H, R, M
752	Excel - Gaming Services Survey - GJ	NETGEAR-TRACK-009887	NETGEAR-TRACK-009887	H, R, M
753	2003-05-27 Netgear Master Purchase Agreement	NETGEAR-TRACK-009888	NETGEAR-TRACK-009930	
754	Excel - M5 /M1 combined	NETGEAR-TRACK-009931	NETGEAR-TRACK-009931	H, R, M
755	2017-10-03 Settlement And Non-Exclusive Patent License Agreement Between Magnacross LLC And Ne	tgear NETGEAR-TRACK-009932	NETGEAR-TRACK-009932	
756	2019-08-14 Non-Exclusive Patent License and Settlement Agreement between Mentone Solutions LLC ar	nd Netgear, Inc. NETGEAR-TRACK-009947	NETGEAR-TRACK-009959	
757	[Duplicate - Deleted]			
758	Excel - NETGEAR Cable Modem Survey	NETGEAR-TRACK-009960	NETGEAR-TRACK-009960	H, R, M
759	Excel - NETGEAR Nighthawk S8000 Gaming & Streaming Switch (GS808E) Usage Survey	NETGEAR-TRACK-009961	NETGEAR-TRACK-009961	H, R, M
760	Excel - NETGEAR Orbi Wifi-System Product Survey	NETGEAR-TRACK-009962	NETGEAR-TRACK-009962	H, R, M
761	Excel - NETGEAR Pro Gaming Service	NETGEAR-TRACK-009963	NETGEAR-TRACK-009963	H, R, M
762	Excel - Nighthawk Pro Gaming: "Game Box" - GJ	NETGEAR-TRACK-009964	NETGEAR-TRACK-009964	H, R, M
763	Excel - Nighthawk R7000 ReadyCLOUD Customer Giveaway	NETGEAR-TRACK-009965	NETGEAR-TRACK-009965	H, R, M
764	Nighthawk WiFi Router Installation - GJ	NETGEAR-TRACK-009966	NETGEAR-TRACK-009966	H, R, M
765	2018-04-30 Settlement and Non-Exclusive Patent License Agreement between Orostream LLC and Netge	ar, Inc. NETGEAR-TRACK-009967	NETGEAR-TRACK-009984	
766	Excel - Q2'23 Orbi Survey- US	NETGEAR-TRACK-009985	NETGEAR-TRACK-009985	H, R, M
767	Excel - Q3'22 Orbi Survey- US	NETGEAR-TRACK-009986	NETGEAR-TRACK-009986	H, R, M
768	Excel - Total US Summary and Summary Costs	NETGEAR-TRACK-009987	NETGEAR-TRACK-009987	
769	2016-01-07 Non-Exclusive Patent License and Settlement Agreement between VeriFire Network Solution Inc.	s, LLC and Netgear, NETGEAR-TRACK-009989	NETGEAR-TRACK-010002	
770	Excel - WiFi 6 Survey - AM	NETGEAR-TRACK-010003	NETGEAR-TRACK-010003	H, R, M
771	Revision History, Delta Networks, Inc. Schematics of RBK50-100S	NETGEAR-TRACK-010004	NETGEAR-TRACK-010027	
772	Orbi Wall Plug, Smart Mesh Extender	NETGEAR-TRACK-010028	NETGEAR-TRACK-010043	
773	[Duplicate - Deleted]			
774	2017-0-26 Delta Networks, Inc. Doc. No. 1ADSC-170195, Block Diagrams, Schematics of 5508014472	, RBR40-100S NETGEAR-TRACK-010044	NETGEAR-TRACK-010062	
775	2017-07-26 Revised History Delta Networks, Inc.	NETGEAR-TRACK-010063	NETGEAR-TRACK-010086	
776	2017-09-11 Delta Networks, Inc. Doc. No. 1ADSS-150171, Block Diagrams, Schematics of RBR20-1001	NAS NETGEAR-TRACK-010087	NETGEAR-TRACK-010104	
777	2018-01-18 Cable Orbi Block Diagram	NETGEAR-TRACK-010105	NETGEAR-TRACK-010117	

	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
778	2018-01-29	Foxconn Confidential, Cable Orbi Block Diagram, IPQ4019-QCA9886	NETGEAR-TRACK-010118	NETGEAR-TRACK-010134	
779	2018-02-27	Foxconn Confidential, 3v3 System	NETGEAR-TRACK-010135	NETGEAR-TRACK-010139	
780		Touch - DSP BTB	NETGEAR-TRACK-010140	NETGEAR-TRACK-010145	
781	2018-07-03	Foxconn Confidential, WiFi Main Board, IPQ4019+QCA9886, Block Diagram	NETGEAR-TRACK-010146	NETGEAR-TRACK-010164	
782	2018-12-11	Revised History Delta Networks, Inc.	NETGEAR-TRACK-010165	NETGEAR-TRACK-010186	
783	2018-10-12	Revised History Delta Networks, Inc.	NETGEAR-TRACK-010187	NETGEAR-TRACK-010209	
784	2018-08-05	Revised History Delta Networks, Inc.	NETGEAR-TRACK-010210	NETGEAR-TRACK-010233	
785	2019-07-23	Revised History Delta Networks, Inc.	NETGEAR-TRACK-010234	NETGEAR-TRACK-010247	
786	2019-12-05	Foxconn Confidential	NETGEAR-TRACK-010268	NETGEAR-TRACK-010304	
787	2019-08-02	Revised History Delta Networks, Inc.	NETGEAR-TRACK-010305	NETGEAR-TRACK-010316	
788	2020-05-22	Foxconn, U12C409T00_Puma7_CE2703 Block Diagram,	NETGEAR-TRACK-010317	NETGEAR-TRACK-010332	
789	2020-02-14	Foxconn Confidential, CBR750 Router Board	NETGEAR-TRACK-010333	NETGEAR-TRACK-010369	
790	2018-09-25	Foxconn Confidential, Schematics	NETGEAR-TRACK-010370	NETGEAR-TRACK-010411	
791	2019.09.25	Foxconn Confidential, Schematics	NETGEAR-TRACK-010412	NETGEAR-TRACK-010453	
792	2019-12-05	Foxconn Confidential, Schematics	NETGEAR-TRACK-010454	NETGEAR-TRACK-010490	
793	2020-06-01	Revised History Delta Networks, Inc.	NETGEAR-TRACK-010491	NETGEAR-TRACK-010515	
794	2020-06-01	Foxconn Confidential, Schematics of AX3600 AX WiFi mesh router	NETGEAR-TRACK-010516	NETGEAR-TRACK-010544	
795		Foxconn Confidential AX3600 AX WiFi mesh router	NETGEAR-TRACK-010545	NETGEAR-TRACK-010573	
796	2020-03-10	Revision History	NETGEAR-TRACK-010574	NETGEAR-TRACK-010590	
797	2020-10-20	Foxconn Confidential, Schematics	NETGEAR-TRACK-010628	NETGEAR-TRACK-010666	
798	2020-10-11	Revised History SXK80 - 100NAS Delta Network Infrastructure (DNI)	NETGEAR-TRACK-010667	NETGEAR-TRACK-010716	
799	2021-03-26	Foxconn Confidential, Schematics of Hawkeye 2.0	NETGEAR-TRACK-010717	NETGEAR-TRACK-010758	
800	2020-11-25	Foxconn Confidential Hawkeye 2.0 IPQ8074A (block diagram)	NETGEAR-TRACK-010759	NETGEAR-TRACK-010768	
801	2021-02-04	Foxconn Confidential, Schematics of Hawkeye 2.0	NETGEAR-TRACK-010769	NETGEAR-TRACK-010810	
802	2021-11-04	Revised History Delta Network Infrastructure (DNI)	NETGEAR-TRACK-010811	NETGEAR-TRACK-010841	
803	2021-11-04	Revised History Delta Network Infrastructure (DNI)	NETGEAR-TRACK-010842	NETGEAR-TRACK-010842	
804	2021-11-08	Revised History Delta Network Infrastructure (DNI), SXR50	NETGEAR-TRACK-010873	NETGEAR-TRACK-010903	
805	2021-11-08	Revised History Delta Network Infrastructure (DNI), NightHawk Mesh 2.0, MR70	NETGEAR-TRACK-010904	NETGEAR-TRACK-010923	
806	2021-11-08	Foxconn Confidential, NightHawk Mesh 2.0, MS70	NETGEAR-TRACK-010924	NETGEAR-TRACK-010943	
807	2021-11-08	Revised History Delta Network Infrastructure (DNI), SXS50	NETGEAR-TRACK-010944	NETGEAR-TRACK-010974	
808	2022-06-16	Foxconn Confidential, Schematics	NETGEAR-TRACK-010975	NETGEAR-TRACK-011016	
809	2023-09-28	Settlement Agreement between XR Communications, LLC d/b/a Vivato Technologies and Netgear, Inc.	NETGEAR-TRACK-011073	NETGEAR-TRACK-011085	
810	2018-12-11	Revised History Delta Networks, Inc.	NETGEAR-TRACK-011086	NETGEAR-TRACK-011107	
811	2023-05-23	Foxconn Confidential, Schematics	NETGEAR-TRACK-011108	NETGEAR-TRACK-011149	
812	2023-01-05	Foxconn Confidential, Waikiki BLOCK DIAGRAM 5GH+6G (6GH)	NETGEAR-TRACK-011150	NETGEAR-TRACK-011169	
813	2023-05-23	Foxconn Confidential, IPQ9574 Alder	NETGEAR-TRACK-011170	NETGEAR-TRACK-011211	
814		Excel - Presentation Material	NETGEAR-TRACK-011212	NETGEAR-TRACK-011212	
815		Excel - Presentation Material	NETGEAR-TRACK-011213	NETGEAR-TRACK-011213	
816		Excel - Presentation Material	NETGEAR-TRACK-011214	NETGEAR-TRACK-011214	
817		Excel - Presentation Material	NETGEAR-TRACK-011215	NETGEAR-TRACK-011215	
818		Excel - Presentation Material	NETGEAR-TRACK-011216	NETGEAR-TRACK-011216	
819		Excel - Presentation Material	NETGEAR-TRACK-011217	NETGEAR-TRACK-011217	
820		Excel - Presentation Material	NETGEAR-TRACK-011218	NETGEAR-TRACK-011218	
821		Excel - Presentation Material	NETGEAR-TRACK-011219	NETGEAR-TRACK-011219	
822		Excel - Presentation Material	NETGEAR-TRACK-011220	NETGEAR-TRACK-011220	
823		Excel - Presentation Material	NETGEAR-TRACK-011221	NETGEAR-TRACK-011221	
824		Excel - Presentation Material	NETGEAR-TRACK-011222	NETGEAR-TRACK-011222	

			BATES NO.	BATES NO.	NETGEAR'S
PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	(beg)	(end)	OBJECTIONS
825		Excel - Presentation Material	NETGEAR-TRACK-011223	NETGEAR-TRACK-011223	ODULETIONS
826		Excel - Presentation Material	NETGEAR-TRACK-011224	NETGEAR-TRACK-011224	
827		Excel - Presentation Material	NETGEAR-TRACK-011225	NETGEAR-TRACK-011225	
828		Excel - Presentation Material	NETGEAR-TRACK-011226	NETGEAR-TRACK-011226	
829		Excel - Presentation Material	NETGEAR-TRACK-011227	NETGEAR-TRACK-011227	
830		Excel - Presentation Material	NETGEAR-TRACK-011228	NETGEAR-TRACK-011228	
831		Excel - Presentation Material	NETGEAR-TRACK-011229	NETGEAR-TRACK-011229	
832		Excel - TAM\$ by Category	NETGEAR-TRACK-011230	NETGEAR-TRACK-011230	
833		Excel - Product List	NETGEAR-TRACK-011231	NETGEAR-TRACK-011231	
834		Excel - Total US Summary and Summary Costs	NETGEAR-TRACK-011232	NETGEAR-TRACK-011232	
835	1999-12-0	Exhibit 3 - Specification of the Bluetooth System Wireless connection made easy	NETGEAR-TRACK-PA-002189	NETGEAR-TRACK-PA-002301	
836		U.S. Patent Publication No. 2002/0197998 A1	NETGEAR-TRACK-PA-007233	NETGEAR-TRACK-PA-007244	
837	2006-03-1	6 U.S. Patent Publication No. 2006/0056370 to Hancock et al.	NETGEAR-TRACK-PA-007441	NETGEAR-TRACK-PA-007471	
838		U.S. Patent Publication No. 2006/0154691 A1	NETGEAR-TRACK-PA-007472	NETGEAR-TRACK-PA-007492	
839		U.S. Patent Publication No. 2007/0160020 A1	NETGEAR-TRACK-PA-007547	NETGEAR-TRACK-PA-007564	
840		U.S. Patent Publication No. 2008/0108317 A1	NETGEAR-TRACK-PA-007595	NETGEAR-TRACK-PA-007629	
841		U.S. Patent No. 6,751,455	NETGEAR-TRACK-PA-007749	NETGEAR-TRACK-PA-007760	
842		U.S. Patent No. 7,167,678	NETGEAR-TRACK-PA-007822	NETGEAR-TRACK-PA-007838	
843		U.S. Patent No. 7,184,466	NETGEAR-TRACK-PA-007839	NETGEAR-TRACK-PA-007855	
844		U.S. Patent No. 7,376,087	NETGEAR-TRACK-PA-007856	NETGEAR-TRACK-PA-007869	
845		U.S. Patent No. 7,404,074	NETGEAR-TRACK-PA-007870	NETGEAR-TRACK-PA-007890	
846		Qualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000001	Q1TRACKTHINGSNETGEAR981SC0000007	H, F
847		Qualcomm Source Codes	O1TRACKTHINGSNETGEAR981SC0000001	Q1TRACKTHINGSNETGEAR981SC0000340	H, F
848		Oualcomm Source Codes	O1TRACKTHINGSNETGEAR981SC0000008	Q1TRACKTHINGSNETGEAR981SC0000009	H, F
849		Oualcomm Source Codes	O1TRACKTHINGSNETGEAR981SC0000010	Q1TRACKTHINGSNETGEAR981SC0000019	H, F
850		Oualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000026	Q1TRACKTHINGSNETGEAR981SC0000027	H, F
851		Qualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000038	Q1TRACKTHINGSNETGEAR981SC0000038	H, F
852		Qualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000061	Q1TRACKTHINGSNETGEAR981SC0000065	H, F
853		Qualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000066	Q1TRACKTHINGSNETGEAR981SC0000068	H, F
854		Oualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000180	Q1TRACKTHINGSNETGEAR981SC0000189	H, F
855		Oualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000190	Q1TRACKTHINGSNETGEAR981SC0000190	H, F
856		Oualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000282	Q1TRACKTHINGSNETGEAR981SC0000289	H, F
857		Oualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000290	Q1TRACKTHINGSNETGEAR981SC0000294	H, F
858		Oualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000295	Q1TRACKTHINGSNETGEAR981SC0000296	H, F
859		Qualcomm Source Codes	O1TRACKTHINGSNETGEAR981SC0000298	Q1TRACKTHINGSNETGEAR981SC0000298	H, F
860		Qualcomm Source Codes	Q1TRACKTHINGSNETGEAR981SC0000299	Q1TRACKTHINGSNETGEAR981SC0000299	H, F
861		Various Documents: Application Notes, Device Revision Guides, Data Sheets, Programmer Guides, Setup Guides,	QCTRACKTHINGSNETGEAR981 0000001	QCTRACKTHINGSNETGEAR981 0006613	H, F
		User Guides, Reference Manuals, etc.	_	_	
862	2021-05-2	7 Qualcomm Technologies Inc. RSSI Variation in IPQ807x and QCN5024/QCN5054 Chipsets Application Note	QCTRACKTHINGSNETGEAR981_0000001	QCTRACKTHINGSNETGEAR981_0000004	H, F
863	2022-11-0	1 Qualcomm Technologies Inc. QCN6100/QCN6102/QCN6112/QCN6122/QCN6132 Device Revision Guide	QCTRACKTHINGSNETGEAR981 0000005	QCTRACKTHINGSNETGEAR981 0000014	H, F
864		Qualcomm Atheros, Inc., Setup Guide, QCA9558.AP.SCP01.1.QCA9984.CUS238.5	QCTRACKTHINGSNETGEAR981 0000073	QCTRACKTHINGSNETGEAR981 0000084	H, F
865		Qualcomm Atheros, Inc., Wireless LAN, QCA9886 AP 10.4 Programmer's Guide	QCTRACKTHINGSNETGEAR981 0000085	QCTRACKTHINGSNETGEAR981 0000717	H, F
866		3 Qualcomm Atheros, Inc., Reference Manual, QCA9984 Proprietary Registers	QCTRACKTHINGSNETGEAR981 0000718	QCTRACKTHINGSNETGEAR981_0000962	H, F
867		Qualcomm Atheros, Inc., Reference Manual, QCA9984 MAC Registers	QCTRACKTHINGSNETGEAR981 0000963	QCTRACKTHINGSNETGEAR981 0001244	H, F
868		Qualcomm Technologies Inc. QCA9886 MAC Registers Reference Manual	OCTRACKTHINGSNETGEAR981 0001245	OCTRACKTHINGSNETGEAR981 0001523	H, F

## BATES NO. BATES NO. NETGEAR'S PTX DATED DESCRIPTION OF EXHIBITS AND WITNESSES (beg) (end) **OBJECTIONS** 869 2023-02-13 Oualcomm Technologies Inc. OCN9024 2.4/5/6 GHz 4 x 4 MIMO 802.11 ax/ac/a/b/g/n WLAN AP RFIC- Data OCTRACKTHINGSNETGEAR981 0001524 OCTRACKTHINGSNETGEAR981 0001573 2020-02-09 Qualcomm Technologies Inc. IPO8065 AP161 and QCA9984 CUS239/CUS260 - Setup Guide OCTRACKTHINGSNETGEAR981 0001574 OCTRACKTHINGSNETGEAR981 0001591 H. F 870 871 2020-02-10 Oualcomm Technologies Inc. IPO8065 AP161 and OCA9984 CUS238/CUS240 - Setup Guide OCTRACKTHINGSNETGEAR981 0001592 OCTRACKTHINGSNETGEAR981 0001606 H. F 2020-02-10 Qualcomm Technologies Inc. IPQ8065.AP161.1.QCA9984.CS.CAS01.1.QCA998 4.CS.CAS01.3.QCA9984.C 872 OCTRACKTHINGSNETGEAR981 0001607 OCTRACKTHINGSNETGEAR981 0001622 H. F US260.5 - Setup Guide 2019-09-17 Qualcomm Technologies Inc. QCA9984 Dual-Band 4x4 with 4 SS MIMO 802.11ac/abgn WLAN Soc - Device 873 QCTRACKTHINGSNETGEAR981 0001623 QCTRACKTHINGSNETGEAR981 0001666 H. F Specification 2019-09-19 Oualcomm Technologies Inc. OCA9984/OCA9994/OCA9985/OCA9986/ OCA9987/OCA9988 - Device Revision 874 OCTRACKTHINGSNETGEAR981 0001667 OCTRACKTHINGSNETGEAR981 0001671 H. F Specification 2017-03-20 Oualcomm Technologies Inc. IPO4019 AP.DK04.1 + OCA9984 CUS238.5 - Setup Guide OCTRACKTHINGSNETGEAR981 0001694 875 OCTRACKTHINGSNETGEAR981 0001672 H. F 876 2019-12-20 Qualcomm Technologies Inc. QCA9886 Single-Band 2x2 with 2 SS MIMO 802.11 a/n/ac WLAN Soc - Device QCTRACKTHINGSNETGEAR981 0001695 QCTRACKTHINGSNETGEAR981 0001736 H. F Specification 877 2023-09-22 Qualcomm Technologies Inc. QCA9886/QCA9896 - Device Revision Guide OCTRACKTHINGSNETGEAR981 0001737 OCTRACKTHINGSNETGEAR981 0001741 H. F 878 2015-10-12 Qualcomm Atheros, Inc. QCA9886.ILQ.1.0 ES, Release Notes OCTRACKTHINGSNETGEAR981 0001742 OCTRACKTHINGSNETGEAR981 0001772 H, F 879 2015-12-16 Qualcomm Atheros, Inc. QCA9886.ILQ.1.0 FC, Release Notes OCTRACKTHINGSNETGEAR981 0001773 OCTRACKTHINGSNETGEAR981 0001812 H. F 880 2015-01-29 Qualcomm Atheros, Inc. QCA9886.ILQ.1.0 CS, Release Notes QCTRACKTHINGSNETGEAR981 0001813 QCTRACKTHINGSNETGEAR981 0001851 H. F 881 2016-04-01 Qualcomm Atheros, Inc. QCA9886.ILQ.1.0 CSU1, Release Notes OCTRACKTHINGSNETGEAR981 0001852 OCTRACKTHINGSNETGEAR981 0001888 H. F 882 2022-11-03 Qualcomm Technologies Inc. QCN5024 2.4 GHz WLAN RFIC Device Specification OCTRACKTHINGSNETGEAR981 0001889 QCTRACKTHINGSNETGEAR981 0001921 H. F 883 2022-11-04 Qualcomm Technologies Inc. QCN5054 5 GHz WLAN RFIC - Device Specification OCTRACKTHINGSNETGEAR981 0001922 OCTRACKTHINGSNETGEAR981 0001955 H. F 884 2022-11-11 Qualcomm Technologies Inc. OC N5024/OC N5054/OC N5124/OC N5154 - Device Revision Guide OCTRACKTHINGSNETGEAR981 0001956 OCTRACKTHINGSNETGEAR981 0001962 H. F 885 2020-08-20 Oualcomm Technologies Inc. OCN5021/OCN5022/OCN5052/OCN5121/OCN5122/OCN5152 - Device Revision OCTRACKTHINGSNETGEAR981 0001963 OCTRACKTHINGSNETGEAR981 0001966 H. F Specification 2020-12-02 Qualcomm Technologies Inc. QCN5052 5 GHz WLAN RFIC - Data Sheet 886 OCTRACKTHINGSNETGEAR981 0001967 OCTRACKTHINGSNETGEAR981 0001989 H. F 887 2020-12-02 Qualcomm Technologies Inc. QCN5022 2.4 GHz WLAN RFIC - Data Sheet QCTRACKTHINGSNETGEAR981 0001990 QCTRACKTHINGSNETGEAR981 0002012 H. F 888 2023-09-13 Qualcomm Technologies Inc. IPQ5018 Wi-Fi Access Point SoC Data Sheet OCTRACKTHINGSNETGEAR981 0002013 OCTRACKTHINGSNETGEAR981 0002089 H. F 889 2023-02-21 Qualcomm Technologies Inc. IPQ5018 AP.MP03.x Setup - User Guide QCTRACKTHINGSNETGEAR981 0002090 QCTRACKTHINGSNETGEAR981 0002117 H. F 890 2021-02-25 Qualcomm Technologies Inc. IPQ5018 TB.MP04.3 Setup - User Guide OCTRACKTHINGSNETGEAR981 0002118 OCTRACKTHINGSNETGEAR981 0002139 H. F 891 2020-07-30 Oualcomm Technologies Inc. IPO5018.ILO.11.3 ES - Release Notes OCTRACKTHINGSNETGEAR981 0002344 OCTRACKTHINGSNETGEAR981 0002374 H. F 892 2021-10-01 Qualcomm Technologies Inc. IPQ8074.WFA.11.5 Easy Mesh R4 and QoS Management R2 ES - Release Notes OCTRACKTHINGSNETGEAR981 0002434 QCTRACKTHINGSNETGEAR981 0002454 H. F 893 2022-04-01 Qualcomm Technologies Inc. IPQ8074.WFA.11.5 Easy Mesh R4 and QoS Management R2 CSU2 - Release Notes QCTRACKTHINGSNETGEAR981 0002518 OCTRACKTHINGSNETGEAR981 0002538 H. F 894 2021-09-29 Qualcomm Technologies Inc. IPQ8074.WFA.11.4 CS - Release Notes QCTRACKTHINGSNETGEAR981 0002598 QCTRACKTHINGSNETGEAR981 0002617 H. F 895 2022-12-13 Qualcomm Technologies Inc. IPQ5018.LC.11.6.0 ED - Release Notes OCTRACKTHINGSNETGEAR981 0002656 OCTRACKTHINGSNETGEAR981 0002693 H. F 896 2023-10-03 Qualcomm Technologies Inc. IPQ5018.LC.11.6.0 CSU2 - Release Note OCTRACKTHINGSNETGEAR981 0002773 OCTRACKTHINGSNETGEAR981 0002809 H. F 897 2023-07-26 Oualcomm Technologies Inc. IPO8074.RDK.12.2 ED1 - Release Notes OCTRACKTHINGSNETGEAR981 0002839 OCTRACKTHINGSNETGEAR981 0002860 H. F 898 2023-11-01 Qualcomm Technologies Inc. IPQ8074.RDK.12.2 ED3 - Release Notes OCTRACKTHINGSNETGEAR981 0002886 OCTRACKTHINGSNETGEAR981 0002914 H. F 899 2015-11-17 Qualcomm Technologies Inc. IPQ4019/IPQ4029 PCIE2.0 Registers - Reference Manual OCTRACKTHINGSNETGEAR981 0002958 OCTRACKTHINGSNETGEAR981 0003001 H, F 900 2015-11-10 Oualcomm Technologies Inc. IPO4018/IPO4028/IPO4019/IPO4029 OUP Registers - Reference Manual OCTRACKTHINGSNETGEAR981 0003218 OCTRACKTHINGSNETGEAR981 0003245 H. F 901 2015-11-09 Qualcomm Technologies Inc. IPO4018/IPO4028/IPO4019/IPO4029 UART DM Registers - Reference Manual OCTRACKTHINGSNETGEAR981 0003246 OCTRACKTHINGSNETGEAR981 0003315 H. F 902 2015-11-16 Qualcomm Technologies Inc. IPQ4018/IPQ4028/IPQ4019/IPQ4029 BLSP BAM Registers - Reference Manual OCTRACKTHINGSNETGEAR981 0003316 OCTRACKTHINGSNETGEAR981 0003365 H. F QCTRACKTHINGSNETGEAR981 0003396 2015-11-27 Qualcomm Atheros, Inc. IPQ4018/IPQ4019/IPQ4028/IPQ4029 QSDK Setup and User Guide 903 OCTRACKTHINGSNETGEAR981 0003366 H. F 904 2019-11-08 Qualcomm Technologies Inc. IPQ4019 Access Point Soc - Device Specification OCTRACKTHINGSNETGEAR981 0003397 OCTRACKTHINGSNETGEAR981 0003483 H. F 905 2019-09-12 Qualcomm Technologies Inc. IPQ4019/IPQ4029 - Device Revision Guide QCTRACKTHINGSNETGEAR981 0003484 QCTRACKTHINGSNETGEAR981 0003491 H. F

OCTRACKTHINGSNETGEAR981 0005925

OCTRACKTHINGSNETGEAR981 0005987

OCTRACKTHINGSNETGEAR981 0006036

OCTRACKTHINGSNETGEAR981 0006085

OCTRACKTHINGSNETGEAR981 0006144

QCTRACKTHINGSNETGEAR981 0006204

OCTRACKTHINGSNETGEAR981 0006267

QCTRACKTHINGSNETGEAR981 0006328

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### BATES NO. BATES NO. **NETGEAR'S** PTX DATED DESCRIPTION OF EXHIBITS AND WITNESSES (beg) (end) **OBJECTIONS** 906 2015-11-19 Oualcomm Atheros, Inc. IPO4018/IPO4028/IPO4019/IPO4029 MAC Registers Reference Manual OCTRACKTHINGSNETGEAR981 0003492 OCTRACKTHINGSNETGEAR981 0003768 H. F 907 2015-11-06 Oualcomm Atheros, Inc. IPO4018/IPO4028/IPO4019/IPO4029 DDRC Registers Reference Manual OCTRACKTHINGSNETGEAR981 0003790 OCTRACKTHINGSNETGEAR981 0003811 H. F 908 2016-02-22 Qualcomm Atheros, Inc. IPO4018/IPO4019/IPO4028/IPO4029 GCC Registers Reference Manual QCTRACKTHINGSNETGEAR981 0004284 OCTRACKTHINGSNETGEAR981 0004402 H. F 909 2016-05-06 Oualcomm Atheros, Inc. IPO4019.ILO.1.1.5 FC Release Notes OCTRACKTHINGSNETGEAR981 0004429 OCTRACKTHINGSNETGEAR981 0004460 H. F 910 2016-10-06 Qualcomm Technologies Inc. IPQ4019.ILQ.1.2.2 ED - Release Notes OCTRACKTHINGSNETGEAR981 0004494 OCTRACKTHINGSNETGEAR981 0004514 H, F 911 2015-07-14 Oualcomm Atheros, Inc. IPO4019.ILO.12.0 ES Release Notes OCTRACKTHINGSNETGEAR981 0004535 OCTRACKTHINGSNETGEAR981 0004567 H. F 912 2015-10-06 Oualcomm Atheros, Inc. IPO4019.ILO.1.1.5 FC Release Notes QCTRACKTHINGSNETGEAR981 0004568 QCTRACKTHINGSNETGEAR981 0004609 H. F 913 2016-01-08 Qualcomm Atheros, Inc. IPO4019.ILO.1.1.5 CSU1 Release Notes OCTRACKTHINGSNETGEAR981 0004655 OCTRACKTHINGSNETGEAR981 0004698 H. F 914 2015-11-18 Oualcomm Atheros, Inc. IPO4018/IPO4028/IPO4019/IPO4029 SOHO Switch UCI Command User Guide OCTRACKTHINGSNETGEAR981 0004699 OCTRACKTHINGSNETGEAR981 0004774 H. F 915 2015-11-18 Qualcomm Atheros, Inc. IPO4018/IPO4028/IPO4019/IPO4029 Home Switch Software Development Kit User Guide OCTRACKTHINGSNETGEAR981 0004775 OCTRACKTHINGSNETGEAR981 0004813 ΗЕ 2015-11-18 Oualcomm Atheros, Inc. IPO4018/IPQ4028/IPQ4019/IPQ4029 SOHO Switch Software Development Kit Reference QCTRACKTHINGSNETGEAR981 0004814 QCTRACKTHINGSNETGEAR981 0004973 H. F 916 917 2015-11-18 Oualcomm Atheros, Inc. IPO4018/IPO4028/IPO4019/IPO4029 Switch Software Development Kit Diagnostic Shell OCTRACKTHINGSNETGEAR981 0004974 OCTRACKTHINGSNETGEAR981 0005070 H. F 2016-10-13 Qualcomm Technologies Inc. IPO4019 AP.DK06 Reference Design - Setup Guide OCTRACKTHINGSNETGEAR981 0005071 OCTRACKTHINGSNETGEAR981 0005091 H. F 918 919 2017-03-10 Qualcomm Technologies Inc. IPQ4019/IPQ4029 AP.DK07 Reference Design - Setup Guide OCTRACKTHINGSNETGEAR981 0005092 QCTRACKTHINGSNETGEAR981 0005116 H. F 920 2021-07-28 Qualcomm Technologies Inc. IPQ8074 Wi-Fi Access Point Soc - Device Specification OCTRACKTHINGSNETGEAR981 0005117 OCTRACKTHINGSNETGEAR981 0005201 H. F 921 2020-05-14 Qualcomm Technologies Inc. IPQ8074 AP.HK01 - Setup Guide OCTRACKTHINGSNETGEAR981 0005202 QCTRACKTHINGSNETGEAR981 0005216 H. F 922 2021-07-29 Qualcomm Technologies Inc. IPQ6018 Wi-Fi Access Point Soc Data Sheet OCTRACKTHINGSNETGEAR981 0005217 OCTRACKTHINGSNETGEAR981 0005294 H. F 923 2020-04-28 Oualcomm Technologies Inc. IPO6000/I PO6010/I PO6018/I PO6028 - Device Revision Guide OCTRACKTHINGSNETGEAR981 0005295 OCTRACKTHINGSNETGEAR981 0005299 H. F 924 2019-03-11 Qualcomm Technologies Inc. IPQ6018 QFPROM Programming Reference Guide OCTRACKTHINGSNETGEAR981 0005300 OCTRACKTHINGSNETGEAR981 0005300 H. F 925 2020-03-12 Qualcomm Technologies Inc. IPQ6018 AP.CP01 Setup Guide OCTRACKTHINGSNETGEAR981 0005301 OCTRACKTHINGSNETGEAR981 0005320 H, F 926 2019-09-16 Oualcomm Technologies Inc. IPO8072/I PO807 4/1 PO8076/I PO8078 - Device Revision Specification OCTRACKTHINGSNETGEAR981 0005321 OCTRACKTHINGSNETGEAR981 0005326 H. F 927 2019-08-26 Qualcomm Technologies Inc. IPQ6018.ILQ.12.0 ES1 - Release Notes QCTRACKTHINGSNETGEAR981 0005327 QCTRACKTHINGSNETGEAR981 0005352 H. F 928 2019-10-31 Qualcomm Technologies Inc. IPQ6018.ILQ.11.0 FC - Release Notes OCTRACKTHINGSNETGEAR981 0005353 OCTRACKTHINGSNETGEAR981 0005384 H. F 929 2020-01-22 Qualcomm Technologies Inc. IPQ6018.ATH.11.0.0 ED1 - Release Notes QCTRACKTHINGSNETGEAR981 0005385 QCTRACKTHINGSNETGEAR981 0005407 H. F 930 2020-03-04 Qualcomm Technologies Inc. IPQ6018.ATH.11.0.0 ED2 - Release Notes OCTRACKTHINGSNETGEAR981 0005408 OCTRACKTHINGSNETGEAR981 0005430 H. F 931 2020-04-08 Qualcomm Technologies Inc. IPQ6018.ATH.11.0.0 CS - Release Notes OCTRACKTHINGSNETGEAR981 0005431 OCTRACKTHINGSNETGEAR981 0005456 H. F 932 2020-11-16 Qualcomm Technologies Inc. IPQ6018.ATH.11.3.0 ED2 - Release Notes OCTRACKTHINGSNETGEAR981 0005457 OCTRACKTHINGSNETGEAR981 0005505 H. F 933 2021-02-24 Qualcomm Technologies Inc. IPQ6018.ATH.11.3.0 CS - Release Notes OCTRACKTHINGSNETGEAR981 0005506 OCTRACKTHINGSNETGEAR981 0005560 H, F 934 2020-10-05 Oualcomm Technologies Inc. IPO6018.ATH.11.3.0 ED1 - Release Notes OCTRACKTHINGSNETGEAR981 0005561 OCTRACKTHINGSNETGEAR981 0005601 H. F 935 2020-10-28 Qualcomm Technologies Inc. IPQ5018.ATH.11.4.0 ED1 - Release Notes OCTRACKTHINGSNETGEAR981 0005602 OCTRACKTHINGSNETGEAR981 0005635 H, F 936 2021-03-18 Qualcomm Technologies Inc. IPQ5018.ATH.11.4.0 ED2 - Release Notes QCTRACKTHINGSNETGEAR981 0005636 QCTRACKTHINGSNETGEAR981 0005673 H. F 937 2021-03-18 Qualcomm Technologies Inc. IPQ5018.ATH.11.4.0 ED3 - Release Notes QCTRACKTHINGSNETGEAR981 0005674 QCTRACKTHINGSNETGEAR981 0005708 H. F 938 2021-04-14 Qualcomm Technologies Inc. IPQ5018.ATH.11.4.0 ED4 - Release Notes OCTRACKTHINGSNETGEAR981 0005709 OCTRACKTHINGSNETGEAR981 0005744 ΗЕ 939 2021-06-30 Qualcomm Technologies Inc. IPQ5018.ATH.11.5.0 ED2 - Release Notes OCTRACKTHINGSNETGEAR981 0005745 OCTRACKTHINGSNETGEAR981 0005805 H. F 940 2021-08-30 Qualcomm Technologies Inc. IPO5018.ATH.11.5.0 QSDK ED1 - Release Notes OCTRACKTHINGSNETGEAR981 0005806 OCTRACKTHINGSNETGEAR981 0005850 H. F 941 2021-09-15 Qualcomm Technologies Inc. IPO5018.ATH.11.5.0 QSDK ED2 - Release Notes OCTRACKTHINGSNETGEAR981 0005851 OCTRACKTHINGSNETGEAR981 0005892 H, F

OCTRACKTHINGSNETGEAR981 0005893

QCTRACKTHINGSNETGEAR981 0005926

OCTRACKTHINGSNETGEAR981 0005988

OCTRACKTHINGSNETGEAR981 0006037

OCTRACKTHINGSNETGEAR981 0006086

QCTRACKTHINGSNETGEAR981 0006145

OCTRACKTHINGSNETGEAR981 0006205

QCTRACKTHINGSNETGEAR981 0006268

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2021-10-13 Oualcomm Technologies Inc. IPO5018.ATH.11.5.0 OSDK ED3 - Release Notes

2022-06-29 Qualcomm Technologies Inc. IPQ5018.LC.11.5.0 CSU1 - Release Notes

2021-10-13 Oualcomm Technologies Inc. IPO5018.LC.11.5.0 ED3 - Release Notes

2021-12-02 Qualcomm Technologies Inc. IPQ5018.LC.11.5.0 ED4 - Release Notes

2021-12-23 Qualcomm Technologies Inc. IPO5018.LC.11.5.0 EDS - Release Notes

2022-01-28 Qualcomm Technologies Inc. IPQ5018.LC.11.5.0 ED6 - Release Notes

2022-03-16 Qualcomm Technologies Inc. IPQ5018.LC.11.5.0 ED7 - Release Notes

2022-04-18 Qualcomm Technologies Inc. IPQ5018.LC.11.5.0 EDS - Release Notes

Dated: July 18, 2025

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
950	2022-05-11	Qualcomm Technologies Inc. IPQ5018.LC.11.5.0 CS - Release Notes	QCTRACKTHINGSNETGEAR981_0006329	QCTRACKTHINGSNETGEAR981_0006389	H, F
951	2020-10-28	Qualcomm Technologies Inc. IPQ6018.ATH.11.4.0 ED1 - Release Notes	QCTRACKTHINGSNETGEAR981 0006390	QCTRACKTHINGSNETGEAR981 0006417	H, F
952	2021-03-18	Qualcomm Technologies Inc. IPQ6018.ATH.11.4.0 ED2 - Release Notes	QCTRACKTHINGSNETGEAR981 0006418	QCTRACKTHINGSNETGEAR981 0006446	H, F
953	2021-03-18	Qualcomm Technologies Inc. IPQ6018.ATH.11.4.0 ED3 - Release Notes	QCTRACKTHINGSNETGEAR981 0006447	QCTRACKTHINGSNETGEAR981 0006475	H, F
954	2021-04-14	Qualcomm Technologies Inc. IPQ6018.ATH.11.4.0 ED4 - Release Notes	QCTRACKTHINGSNETGEAR981 0006476	QCTRACKTHINGSNETGEAR981 0006504	H, F
955		Qualcomm Technologies Inc. IPO8074A Wi-Fi Access Point Soc - Device Specification	OCTRACKTHINGSNETGEAR981 0006505	OCTRACKTHINGSNETGEAR981 0006589	H, F
956	2019-07-01	Qualcomm Technologies Inc. IPQ8072A/I PQ807 4A/I PQ8076A/I PQ8078A Device Revision Specification	OCTRACKTHINGSNETGEAR981 0006590	QCTRACKTHINGSNETGEAR981 0006594	H, F
957		Qualcomm Technologies Inc. IPQ8074.WFA.11.3 EasyMesh R3 User Guide	OCTRACKTHINGSNETGEAR981 0006595	QCTRACKTHINGSNETGEAR981 0006613	H, F
958		Qualcomm Atheros, Inc., Wireless LAN, QCA9886 AP 10.4 Programmer's Guide - Excerpt	QCTRACKTHINGSNETGEAR981 0000685	QCTRACKTHINGSNETGEAR981 0000697	H, F
,,,,	2010 01 20	(QCTRACKTHINGSNETGEAR981 0000085)	Q = 11	Q = 11	12, 1
959	2025-04-01	TrackThings LLC's Motion In Limine No. 1			
960		TrackThings LLC's Motion In Limine No. 1 - Exhibit A - Albright Standing Order Governing Proceedings (OGP)			
700	2023 04 01	4.4Patent Cases, dated January 23, 2024			
961	2025-04-01	TrackThings LLC's Motion In Limine No. 1 - Exhibit B - Gilstrap Standing Order on Motions in Limine, dated			
701	2023-04-01	December 14, 2022			
962	2025 04 01	TrackThings LLC's Motion In Limine No. 2			
963		Track Things LLC's Motion In Limine No. 2 - Exhibit A - Albright Standing Order Governing Proceedings (OGP)			
903	2023-04-01	4.4Patent Cases, dated January 23, 2024			
964	2025 04 01	TrackThings LLC's Motion In Limine No. 2 - Exhibit B - Gilstrap Standing Order on Motions in Limine, dated			
904	2023-04-01	December 14, 2022			
065	2025 04 01	TrackThings LLC's Motion In Limine No. 3			
965		Track Trings LLC's Motion in Limine No. 3  TrackThings LLC's Motion In Limine No. 3 - Exhibit A - 2021/2022 - Orbi WiFi 6E + Orbi WiFi 6 Survey	NETGEAR TRACK 000022	NETGEAR TRACK 000022	
966			NETGEAR-TRACK-009832	NETGEAR-TRACK-009832	
967		TrackThings LLC's Motion In Limine No. 3 - Exhibit B - 2022March - Orbi WiFi 6E + Orbi WiFi 6 Survey	NETGEAR-TRACK-009847	NETGEAR-TRACK-009847	
968		TrackThings LLC's Motion In Limine No. 3 - Exhibit C - BrianA Orbi Pro Purchase Usage	NETGEAR-TRACK-009863	NETGEAR-TRACK-009863	
969		TrackThings LLC's Motion In Limine No. 3 - Exhibit D - Q2'23 Orbi Survey - US	NETGEAR-TRACK-009985	NETGEAR-TRACK-009985	
970		TrackThings LLC's Motion In Limine No. 3 - Exhibit E - Q3'22 Orbi Survey - US	NETGEAR-TRACK-009986	NETGEAR-TRACK-009986	
971	2025-04-01	TrackThings LLC's Motion In Limine No. 3 - Exhibit F - Excerpts to Joseph Emmanuel's December 13, 2023			
		deposition transcript.			
972	2025-04-01	Defendant Netgear, Inc.'s Motion in Limine No. 1 to Exclude Evidence, Testimony, or Argument Regarding			
		Secondary Considerations of Non-Obviousness			
973	2025-04-01	Defendant Netgear, Inc.'s Motion in Limine No. 1 - Exhibit 1 - Excerpted TrackThings' Supplemental Responses to			
		NETGEAR's Interrogatories, dated December 1, 2023			
974	2025-04-01	Defendant Netgear, Inc.'s Motion in Limine No. 1 - Exhibit 2 - CNET, "Best Mesh Wi-Fi Systems in 2024: Top	TT-N-0093562	TT-N-0093574	
		Rated Routers for Whole-Home Wi-Fi," https://www.cnet.com/home/internet/best-mesh-wifi-routers/ (Jan. 1, 2024)			
975	2025-04-01	Defendant Netgear, Inc.'s Motion in Limine No. 1 - Exhibit 3 - Businesswire, "NETGEAR Introduces Powerful New	,		
		Tri-band Mesh WiFi to the Portfolio of Nighthawk Mesh WiFi 6 Systems,"			
		https://www.businesswire.com/news/home/20210316005906/en/NETGEARIntroduces-Powerful-New-Tri-band-			
		Mesh-WiFi-to-the-Portfolio-of-Nighthawk-Mesh-WiFi-6-Systems (Mar. 16, 2021).			
976	2025-04-01	Defendant Netgear, Inc.'s Motion in Limine No. 1 - Exhibit 4 - Comparison between TrackThings' Response to			
		NETGEAR's Interrogatory No. 8 and Expert Report of Dr. Harry Bims			
977	2025-04-01	Defendant Netgear, Inc.'s Motion in Limine No. 1 - Exhibit 5 - TQ Delta v. 2Wire, No. 13-1835-RGA, D.I. 1615 (D.			
		Del. July 12, 2022)			
978	2025-04-01	Defendant Netgear, Inc.'s Motion in Limine No. 2 to Exclude Evidence, Testimony, or Argument Regarding			
	2020 0.01	Secondary Considerations of Mr. Gabara's Unasserted Patents			
979	2025-04-01	Defendant Netgear, Inc.'s Motion in Limine No. 2 - Exhibit 1 - Excerpted Corrected Transcript of February 19, 2025			
	2023 07 01	Hearing on Dispositive Motions			

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
980	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 2 - Exhibit 2 - Excerpted Deposition Transcript of Thaddeus	(beg)	(cnu)	OBJECTIONS
700	2023 04 0	Gabara's December 19, 2023 Deposition			
981	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 2 - Exhibit 3 - Excerpted TrackThings' Supplemental Responses to			
, 01	2025 0.0	NETGEAR's Interrogatories, dated January 12, 2024			
982	2025-04-0				
		No. 21-1694, D.I. 440 (D. Del. Aug. 1, 2024)			
983	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 2 - Exhibit 5 - Takeda Pharm. v. Apotex, C.A. No. 18-88-LPS, D.I.			
		990 (D. Del. Jan. 7, 2021)			
984	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 2 - Exhibit 6 - Excerpted Opening Expert Report of Stephen A.			
		Holzen Regarding Damages, dated January 25, 2024			
985	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 3 to Exclude Evidence, Testimony, or Argument Referencing			
		Speculative and/or Estimated Sales			
986	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 3 - Exhibit 1 - Excerpted Reply Expert Report of Stephen A. Holzen	1		
		Regarding Damages, dated August 15, 2024			
987	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 3 - Exhibit 2 - Document bearing Bates label NETGEAR-TRACK-	NETGEAR-TRACK-011233	NETGEAR-TRACK-011233	
		011233 produced by Defendant NETGEAR on September 5, 2024			
988	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 3 - Exhibit 3 - Document bearing Bates label NETGEAR-TRACK-	NETGEAR-TRACK-011234	NETGEAR-TRACK-011234	
		011234 produced by Defendant NETGEAR on September 5, 2024			
989	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 3 - Exhibit 4 - Document bearing Bates label NETGEAR-TRACK-	NETGEAR-TRACK-011565	NETGEAR-TRACK-011565	
		011565 produced by Defendant NETGEAR on March 31, 2025			
990	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 3 - Exhibit 5 - Document bearing Bates label NETGEAR-TRACK-	NETGEAR-TRACK-011566	NETGEAR-TRACK-011566	
		011566 produced by Defendant NETGEAR on March 31, 2025			
991	2025-04-0	Defendant Netgear, Inc.'s Motion in Limine No. 3 - Exhibit 6 - Document bearing Bates label NETGEAR-TRACK-	NETGEAR-TRACK-011567	NETGEAR-TRACK-011567	
		011567 produced by Defendant NETGEAR on March 31, 2025			
992	2025-06-1	Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 to Exclude Evidence,			
		Testimony, or Argument Regarding Either Party's Other Litigations or Arbitrations			
993	2025-06-1	Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 1 - Excerpted Reply			
		Expert Report of Stephen A. Holzen Regarding Damages, dated August 15, 2024			
994	2025-06-1	Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 2 - Excerpted			
		Rebuttal Expert Report of Douglas Kidder Regarding Damages, dated July 9, 2024			
995	2025-06-1	Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 3 - Defendant's			
		Answer Brief in Opposition to Plaintiff's Motion in Limine No. 1, Sunoco Partners Marketing & Terminals v.			
		Powder Springs Logistics, C.A. No. 17-1390 (LPS-CJB), D.I. 721-13 (D. Del. Nov. 12, 2021)			
22.5					
996	2025-06-1	Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 4 - Defendant's			
		Opposition to Motion in Limine No. 2, International Business Machines v. Zynga, C.A. No. 22-590-GBW, D.I. 514-	-		
005	2025.06.1	1 (D. Del. Sept. 5, 2024)			
997	2025-06-1	Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 5 - Excerpted Pretrial			
		Conference Transcript from W.L. Gore & Assocs. v. C.R. Bard, C.A. No. 11-515-LPS-SJB, D.I. 502 (D. Del. Nov.			
000	2025.06.19	25, 2015)			
998	2025-06-1	B Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 6 - Touchstream			
000	2025.06.19	Techs. v. Google, No. 6:21-CV-569-ADA, D.I. 232 (W.D. Tex. July 14, 2023)			
999	2025-06-1	B Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 7 - EcoFactor v.			
1000	2025.06.15	Ecobee, No. 6:21-cv-00428-ADA, D.I. 209 (W.D. Tex. June 1, 2023)			
1000	2025-06-1.	B Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 8 - Ravgen v. Lab'y			
		Corp. of Am. Holdings , No. W-20-CV-00969-ADA, D.I. 199 (W.D. Tex. Sept. 13, 2022)			

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
1001	2025-06-13	Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 9 - Excerpted	(***8)		
		Supplemental Expert Report of Douglas Kidder Regarding Damages, dated May 21, 2025			
1002	2025-06-13	B Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 1 - Exhibit 10 - Excerpted			
		Supplemental Expert Report of Henry Houh, Ph.D., served May 21, 2025			
1003	2025-06-13	B Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 11 - Excerpted			
		Transcript from the May 27, 2025 Deposition of Stephen A. Holzen			
1004	2025-06-13	B Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 1 - Exhibit 12 - Excerpted			
		Second Supplemental Expert Report of Stephen A. Holzen, dated May 9, 2025			
1005	2025-06-13	Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 2 to Exclude Evidence,			
		Testimony, or Argument Regarding PreTrial Proceedings or Issues			
1006	2025-06-13	B Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 2 - Exhibit 1 - Excerpted			
		Opening Expert Report of Stephen A. Holzen Regarding Damages, dated January 25, 2024			
1007	2025-06-13	B Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 2 - Exhibit 2 - Excerpted			
100,	2020 00 11	Supplemental Expert Report of Stephen A. Holzen, dated March 13, 2025			
1008	2025-06-13	B Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion In Limine No. 2 - Exhibit 3 - Excerpted			
1000	2020 00 11	Transcript from the September 6, 2024 Deposition of Stephen Holzen			
1009	2025-06-13	B Defendant Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 2 - Exhibit 4 - Excerpted Second			
1007	2023 00 1.	Supplemental Expert Report of Stephen A. Holzen, dated May 9, 2025			
1010	2025-06-13	3 Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 to Exclude Evidence, Testimony, or			
1010	2023 00 1	Argument Regarding Netgear's Own Patents			
1011	2025-06-13	Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 1 - <i>Abbott Diabetes Care v</i> .			
1011	2023 00 1.	Dexcom, C.A. No. 21-977-KAJ, D.I. 555 (D. Del. Nov. 9, 2023)			
1012	2025-06-13	3 Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 2 - Excerpted Rebuttal Expert			
1012	2023 00 1.	Report of Douglas Kidder Regarding Damages, dated July 9, 2024			
1013	2025-06-13	Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 3 - Excerpted Plaintiff's			
		Deposition Designations, dated March 20, 2025			
1014	2025-06-13	Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 4 - Plaintiff's Proposed Final Jury Instructions, dated March 20, 2025			
1015	2025-06-13	Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 5 - U.S. Patent No. 10,292,159,			
		produced at TT N-0008743 – TT-N-0008821			
1016	2025-06-13	Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 6 - Excerpted Transcript from			
		the December 13, 2023 Deposition of Joseph Emmanuel			
1017	2025-06-13	Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 7 - U.S. Patent No. 10,681,698			
		marked as Exhibit 20 from the December 13, 2023 Deposition of Joseph Emmanuel			
1018	2025-06-13	Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 8 - U.S. Patent No. 10,292,159			
		marked as Exhibit 27 from the December 13, 2023 Deposition of Joseph Emmanuel			
1019	2025-06-13	Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 9 - Excerpted Deposition			
		Transcript of Anna Lam from January 5, 2024			
1020	2025-06-13	Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 10 - Excerpted Plaintiff's Trial			
		Exhibit List			
1021	2025-06-13	3 Netgear, Inc.'s Opposition to TrackThings LLC's Motion <i>In Limine</i> No. 3 - Exhibit 11 - Excerpted Supplemental			
	2020 00 10	Expert Report of Henry Houh, Ph.D., served May 21, 2025			
1022	2025-06-13	3 TrackThings LLC's Opposition to Defendant's Motion <i>In Limine</i> No. 1			
1023		3 TrackThings LLC's Opposition to Defendant's Motion <i>In Limine</i> No. 1 - Exhibit A - Expert Rebuttal Report of Dr.			
1023	2023 00-1.	Harry V. Bims Regarding Validity of U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893, dated January 9, 2024			
		7. 2024			

PTX	DATED DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
1024	2025-06-13 TrackThings LLC's Opposition to Defendant's Motion In Limine No. 1 - Exhibit B - Affirmative Expert Report Stephen A. Holzen, dated January 25, 2024		, ,	
1025	2025-06-13 TrackThings LLC's Opposition to Defendant's Motion In Limine No. 2			
1026	2025-06-13 TrackThings LLC's Opposition to Defendant's Motion In Limine No. 2 - Exhibit A - FY 2024: Thad Gabara's Performance Review			
1027	2025-06-13 TrackThings LLC's Opposition to Defendant's Motion <i>In Limine</i> No. 2 - Exhibit B - Excerpted Deposition Transcript of Thaddeus Gabara from December 19, 2023			
1028	2025-06-13 TrackThings LLC's Opposition to Defendant's Motion <i>In Limine</i> No. 2 - Exhibit C - Affirmative Expert Report Stephen A. Holzen, dated January 25, 2024			
1029	2025-06-13 TrackThings LLC's Opposition to Defendant's Motion <i>In Limine</i> No. 2 - Exhibit D - Excerpted Expert Report of Douglas Kidder Regarding Damages, dated July 9, 2024			
1030	2025-06-13 TrackThings LLC's Opposition to Defendant's Motion In Limine No. 2 - Exhibit E - Astellas Pharma Inc. v. Sandoz Inc., 1:20-cv-01589-JFB-EGT, D.E. 501 (D.Del. Jan. 27, 2023)			
1031	2025-06-13 TrackThings LLC's Opposition to Defendant's Motion In Limine No. 3			
1032	2025-06-13 TrackThings LLC's Opposition to Defendant's Motion In Limine No. 3 - Exhibit A - Excerpted Second Supplemental Expert Report of Stephen A. Holzen, dated May 9, 2025			
1033	2025-06-20 Defendant Netgear, Inc.'s Reply in Support of Its Motion <i>In Limine</i> No. 1 to Exclude Evidence, Testimony, or Argument Regarding Secondary Considerations of Non-Obviousness			
1034	2025-06-20 Defendant Netgear, Inc.'s Reply in Support of Its Motion In Limine No. 1 - Exhibit 1 - Excerpted TrackThings' Responses and Objections to NETGEAR's First Set of Interrogatories, dated September 14, 2023			
1035	2025-06-20 Defendant Netgear, Inc.'s Reply in Support of Its Motion <i>In Limine</i> No. 1 - Exhibit 2 - Excerpted Deposition Transcript of Harry Bims from October 21, 2024			
1036	2025-06-20 Defendant Netgear, Inc.'s Reply in Support of Its Motion <i>In Limine</i> No. 2 to Exclude Evidence, Testimony, or Argument Regarding Licensing of mr. Gabara's Unasserted Patents			
1037	2025-06-20 Defendant Netgear, Inc.'s Reply in Support of Its Motion <i>In Limine</i> No. 3 to Exclude Evidence, Testimony, or Argument Referencing Speculative and/or Estimated Sales			
1038	2025-06-20 TrackThings LLC's Reply in Support of its Motion In Limine No. 1			
1039	2025-06-20 TrackThings LLC's Reply in Support of its Motion In Limine No. 1 - Exhibit A - Excerpted Affirmative Expert Report Stephen A. Holzen			
1040	2025-06-20 TrackThings LLC's Reply in Support of its Motion In Limine No. 2			
1041	2025-06-20 TrackThings LLC's Reply in Support of its Motion In Limine No. 3			
1042	2025-05-27 Deposition Transcript of Stephen Holzen			
1043	2025-05-27 Deposition Transcript of Stephen Holzen - Exhibit 1 - Expert Report of Stephen Holzen, dated January 25, 2024			
1044	2025-05-27 Deposition Transcript of Stephen Holzen - Exhibit 2 - Reply Expert Report of Stephen Holzen, dated August 15, 2024			
1045	2025-05-27 Deposition Transcript of Stephen Holzen - Exhibit 3 - Supplemental Expert Report of Stephen Holzen, dated March 13, 2025			
1046	2025-05-27 Deposition Transcript of Stephen Holzen - Exhibit 4 - Second Supplemental Expert Report of Stephen Holzen, dated May 09, 2025			
1047	2025-05-28 Deposition Transcript of Douglas Kidder Vol. II			
1048	2025-07-03 Deposition Transcript of Douglas Kidder Vol. II - Errata			
1049	2025-05-28 Deposition Transcript of Douglas Kidder Vol. II - Exhibit 1 - Opening Expert Report of Douglas Kidder, dated July 09, 2024			
1050	2025-05-28 Deposition Transcript of Douglas Kidder Vol. II - Exhibit 2 - Opening Expert Report Exhibits 1-8			

PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
1051		Deposition Transcript of Douglas Kidder Vol. II - Exhibit 3 - Supplemental Expert Report of Douglas Kidder Regarding Damages w Exs 1-2, Supplemental Exhibit DGK-1-DGK-2, dated May 21, 2025	. 0,		
1052		Deposition Transcript of Douglas Kidder Vol. II - Exhibit 4 - U.S. Patent No.9,332,442, dated May 03, 2016			
1053		Defendant Netgear, Inc.'s Fourth Supplemental Objections And Responses To Plaintiff Trackthings LLC's Interrogation	ory No. 2		
1054	2025-05-02	Defendant Netgear, Inc.'s Objections And Responses To Plaintiff Trackthings LLC's Questions Regarding Production Netgear-Track-016			
1055		Deposition Transcript of Henry Houh, Volume II			
1056		Deposition Transcript of Henry Houh - Supp. Exhibit 1 -Notice of Deposition of Dr. Henry Houh (Dkt. 384), dated June 23, 2025			
1057		Deposition Transcript of Henry Houh - Supp. Exhibit 2 - Reply Expert Report of Henry Houh, Ph.D Regarding Invalidity of U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893, dated August 15, 2024			
1058		Deposition Transcript of Henry Houh - Supp. Exhibit 3 - Rebuttal Expert Report of Henry Houh, Ph.D. Regarding Non-Infringement of U.S. Patent Nos. 9,642,017, 9332,442, and 10,107,893, dated July 9, 2024			
1059		Deposition Transcript of Henry Houh - Supp. Exhibit 4 - Expert Report of Henry Houh, Ph.D. Regarding Invaldity of U.S. Patent Nos. 9,642,017, 9,332,442, and 10,107,893, dated January 25, 2024			
1060		Deposition Transcript of Henry Houh - Supp. Exhibit 5 - Supplemental Expert Report of Stephen A. Holzen, dated March 13, 2025			
1061		Deposition Transcript of Henry Houh - Supp. Exhibit 6 - Second Supplemental Expert Report of Stephen A. Holzen, dated May 9, 2025			
1062		Deposition Transcript of Henry Houh - Supp. Exhibit 7 - Affirmative Expert Report Stephen A. Holzen, dated January 25, 2025			
1063	2025-06-24	Deposition Transcript of Henry Houh - Supp. Exhibit 8 - Reply Expert Repot of Stephen A. Holzen, dated August 15, 2024			
1064		Deposition Transcript of Henry Houh - Supp. Exhibit 9 - Supplemental Expert Report of Henry Houh, Ph.D., dated May 19, 2025			
1065	2025-06-24	Deposition Transcript of Henry Houh - Supp. Exhibit 10 - Supplemental Expert Report of Douglas Kidder Regarding Damages, dated May 21, 2025			
1066		Deposition Transcript of Henry Houh - Supp. Exhibit 11 - TrackThings LLC v. Amazon.com - Docket Sheet, printed June 23, 2025			
1067	2025-06-24	Deposition Transcript of Henry Houh - Supp. Exhibit 12 - eero and erro Beacon - 2nd gen Tech Specs	NETGEAR-TRACK-011671	NETGEAR-TRACK-011672	
1068	2025-06-24	Deposition Transcript of Henry Houh - Supp. Exhibit 13 - Netgear Orbi Whole Home AC1200 Mesh WiFi Satellite Date Sheet RBS10	NETGEAR-TRACK-009631	NETGEAR-TRACK-009634	
1069		Deposition Transcript of Henry Houh - Supp. Exhibit 14 - eero Beacon, Extend your eero network with Wi-Fi 5 https://eero.com/shop/eero-beacon	NETGEAR-TRACK-011673	NETGEAR-TRACK-011681	
1070	2001-11-16	Letter from John T. Dickson of Agere Systems to T.Gabara re promotion to Consulting Member of Technical Staff 2001			
1071		Letter from John T. Dickson of Agere Systems to T.Gabara re promotion to Consulting Member of Technical Staff 2001 - Photo			

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

**JURY TRIAL DEMANDED** 

## **EXHIBIT 8: NETGEAR'S AMENDED TRIAL EXHIBIT LIST**

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Attorneys for Defendant NETGEAR, Inc.

Dated: July 18, 2025

DTX	BegBates	EndBates	Description	TT Objection
DTX-0001	BCM000001	BCM000066	Broadcom BCM6710 Advanced Data Sheet	401-403, 602
				801-802, 901
DTX-0002	BCM000067	BCM0000291	Broadcom BCM6755 Advanced Data Sheet	401-403, 602
				801-802, 901
DTX-0003	BCM0000292	BCM000544	Broadcom BCM6756 Advanced Data Sheet	401-403, 602
				801-802, 903
DTX-0004	BCM0000545	BCM000645	Broadcom	
			BCM43XX/BCM47XX/BCM53XX/BCM67XX	
			SmartMesh Release 3 Application Note	
DTX-0005	BCM0000646	BCM0000656	Broadcom BCM43XX/BCM47XX/BCM53XX	
			SmartMesh Application Note	
DTX-0006	BROADCOM-NETGEAR-0000001	BROADCOM-NETGEAR-0000073	BROADCOM Source Code	401-403
DTX-0007	BROADCOM-TT-0000001	BROADCOM-TT-0000112	BROADCOM Source Code	401-403
DTX-0008	NETGEAR-SC-0000001	NETGEAR-SC-0000098	NETGEAR Source Code	401-403
DTX-0009	NETGEAR-TRACK-000108	NETGEAR-TRACK-000111	NETGEAR Orbi Whole Home AC2200 Tri-band	801-802
			WiFi System Data Sheet	
DTX-0010	NETGEAR-TRACK-001103	NETGEAR-TRACK-001110	NETGEAR Nighthawk Mesh Wifi 6 System	801-802
			MK64 Data Sheet	
DTX-0011	NETGEAR-TRACK-001119	NETGEAR-TRACK-001120	NETGEAR Nighthawk Mesh Wifi 6 System	801-802, 90
			MK72 Technical Specifications	
DTX-0012	NETGEAR-TRACK-001470	NETGEAR-TRACK-001471	NETGEAR Nighthawk Mesh Wifi 6 Add-on	401-403, 60
			Satellite MS70 Technical Specifications	801-802, 90
DTX-0013	NETGEAR-TRACK-001472	NETGEAR-TRACK-001477	NETGEAR Nighthawk Tri-Band Mesh Wifi 6	801-802
			Add-on Satellite MS80 Data Sheet	
DTX-0014	NETGEAR-TRACK-003000	NETGEAR-TRACK-003003	NETGEAR Orbi Whole Home Tri-Band Mesh	801-802
			Wifi 6 System RBK852 Data Sheet	
DTX-0015	NETGEAR-TRACK-004211	NETGEAR-TRACK-004214	NETGEAR Orbi Home AC1200 Mesh WiFi	801-802
			Satellite RBS10 data sheet,	
			https://www.netgear.com/images/datasheet/	
	İ		orbi/RBS10.pdf	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0016	NETGEAR-TRACK-004538	NETGEAR-TRACK-004541	NETGEAR Orbi Whole Home Tri-Band Mesh Wifi 6 Satellite RBS850 Data Sheet	801-802
DTX-0017	NETGEAR-TRACK-004544	NETGEAR-TRACK-004548	NETGEAR Orbi Quad-band Mesh Wifi 6E Satellite RBSE960 Data Sheet	801-802
DTX-0018	NETGEAR-TRACK-004705	NETGEAR-TRACK-004707	NETGEAR Orbi Pro - AC3000 Tri-band Wifi System SRK60 Data Sheet	801-802
DTX-0019	NETGEAR-TRACK-004897	NETGEAR-TRACK-004898	NETGEAR Orbi Pro - AC3000 Tri-Band Add-on Satellite SRS60 data sheet, https://www.netgear.com/media/SRS60_tcm 148-60067.pdf	801-802
DTX-0020	NETGEAR-TRACK-004932	NETGEAR-TRACK-004934	NETGEAR Data Sheet - SXK30 Orbi Pro WiFi 6 Mini - AX1800 Wifi System	801-802
DTX-0021	NETGEAR-TRACK-005137	NETGEAR-TRACK-005380	NETGEAR User Manual - Orbi Pro WiFi 6 Mini AX1800 Dual-band Mesh System (SXK30) (July 2022)	801-802
DTX-0022	NETGEAR-TRACK-006326	NETGEAR-TRACK-006331	MK83 vs MK93 Slide Deck	
DTX-0023	NETGEAR-TRACK-006385	NETGEAR-TRACK-006422	NETGEAR MK9x P3 Exit (June 28, 2023)	801-802
DTX-0024	NETGEAR-TRACK-006614	NETGEAR-TRACK-006634	MK9x Tri-Band Nighthawk Mesh WiFi 6E System P0 Exit (March 2, 2022)	801-802
DTX-0025	NETGEAR-TRACK-007204	NETGEAR-TRACK-007221	RBXD1003 – Orbi Desktop P0 Exit (March 2, 2016)	801-802
DTX-0026	NETGEAR-TRACK-007733	NETGEAR-TRACK-007748	RBK760 Series P0 Exist (October 28, 2020)	801-802
DTX-0027	NETGEAR-TRACK-009404	NETGEAR-TRACK-009405	NETGEAR Tri-band Mesh Wifi 6 System product package	801-802
DTX-0028	NETGEAR-TRACK-009438	NETGEAR-TRACK-009441	NETGEAR Orbi Whole Home AC1200 Mesh Wifi System RBK12 Data Sheet	801-802

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DTX	BegBates	EndBates	Description	TT Objections
DTX-0029	NETGEAR-TRACK-009592	NETGEAR-TRACK-009593	NETGEAR Orbi 960 Series Whole Home Quad-	
			band Mesh Wifi System product packaging	
DTX-0030	NETGEAR-TRACK-009631	NETGEAR-TRACK-009634	NETGEAR Orbi Whole Home AC1200 Mesh	801-802
			Wifi Satellite RBS10 Data Sheet	
DTX-0031	NETGEAR-TRACK-009756	NETGEAR-TRACK-009756	NETGEAR Orbi Pro Wifi 6 Mini product	
			packaging	
DTX-0032	NETGEAR-TRACK-009760	NETGEAR-TRACK-009760	Trackthings_NETGEAR_Sales Data.xlsx	
DTX-0033	NETGEAR-TRACK-009761	NETGEAR-TRACK-009761	121 - Orbi WiFi 6 Survey - AM.xlsx	801-802
DTX-0034	NETGEAR-TRACK-009762	NETGEAR-TRACK-009781	Settlement and License Agreement between	801-802, 901
			NETGEAR, Inc. and Innovatio IP Ventures, LLC,	
			and Innovatio Management, LLC, dated	
			February 6, 2014	
DTV 0035	NETCEAR TRACK 000702	NETCEAR TRACK 000005	Cathlana and American that was a Make	004 003 004
DTX-0035	NETGEAR-TRACK-009792	NETGEAR-TRACK-009805	Settlement and Agreement between Wetro LAN LLC and NETGEAR, Inc., dated April 20,	801-802, 901
			2016	
			2010	
DTX-0036	NETGEAR-TRACK-009806	NETGEAR-TRACK-009817	Settlement and Patent License Agreement	801-802, 901
			between Modern Telecom Systems LLC and	
			NETGEAR, Inc., dated November 25, 2019	
DTX-0037	NETGEAR-TRACK-009818	NETGEAR-TRACK-009831	Settlement and License Agreement between	
			Wireless Transport LLC and NETGEAR, Inc.,	
			dated November 25, 2019	
DTX-0038	NETGEAR-TRACK-009832	NETGEAR-TRACK-009832	20212022 - Orbi WiFi 6E Orbi WiFi 6	801-802
			Survey.xlsx	
DTX-0039	NETGEAR-TRACK-009833	NETGEAR-TRACK-009846	Settlement and Patent License Agreement	801-802, 901
			between NETEAR, Inc. and Hera Wireless S.A.,	
			dated January 20, 2022	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0040	NETGEAR-TRACK-009847	NETGEAR-TRACK-009847	2022March - Orbi WiFi 6E Orbi WiFi 6	801-802
			Survey.xlsx	
DTX-0041	NETGEAR-TRACK-009848	NETGEAR-TRACK-009861	Settlement and Non-Exclusive Patent License	801-802, 901
			Agreement between 2BCom, LLC and	
			NETGEAR, Inc., dated August 21, 2021	
DTX-0042	NETGEAR-TRACK-009862	NETGEAR-TRACK-009862	accused products demand forecast.xlsx	401-403, 602, 801
				802, 901, U
DTX-0043	NETGEAR-TRACK-009863	NETGEAR-TRACK-009863	BrianA_Orbi_Pro_Purchase_Usage.xlsx	801-802
DTX-0044	NETGEAR-TRACK-009864	NETGEAR-TRACK-009864	Cable ModemCable Modem Router US -	801-802
			GJ.xlsx	
DTX-0045	NETGEAR-TRACK-009865	NETGEAR-TRACK-009865	Cable Survey.xlsx	801-802
DTX-0046	NETGEAR-TRACK-009866	NETGEAR-TRACK-009875	Settlement and License Agreement between	
			BE Labs, Inc. and NETGEAR, Inc., dated	
			October 24, 2018	
DTX-0047	NETGEAR-TRACK-009876	NETGEAR-TRACK-009885	Patents in Suit Settlement Agreement	
			between Frequency Systems, LLC and	
			NETGEAR, Inc., dated November 12, 2015	
DTX-0048	NETGEAR-TRACK-009886	NETGEAR-TRACK-009886	Gaming Router.xlsx	801-802
DTX-0049	NETGEAR-TRACK-009887	NETGEAR-TRACK-009887	Gaming Services Survey - GJ.xlsx	801-802
DTX-0050	NETGEAR-TRACK-009931	NETGEAR-TRACK-009931	M5 M1 combined.xlsx	801-802
DTX-0051	NETGEAR-TRACK-009932	NETGEAR-TRACK-009946	Settlement and Non-Exclusive Patent License	801-802, 901
			and Settlement Agreement between	
			Magnacross LLC and NETGEAR, Inc., dated	
			October 5, 2017	
DTX-0052	NETGEAR-TRACK-009947	NETGEAR-TRACK-009959	Non-Exclusive Patent License and Settlement	
			Agreement between Mentone Solutions LLC	
			and NETGEAR, Inc., dated August 14, 2019	
DTX-0053	NETGEAR-TRACK-009960	NETGEAR-TRACK-009960	NETGEAR Cable Modem Survey.xlsx	801-802

DTX	BegBates	EndBates	Description	TT Objections
DTX-0054	NETGEAR-TRACK-009961	NETGEAR-TRACK-009961	NETGEAR Nighthawk S8000 Gaming	801-802
			Streaming Switch GS808E Usage Survey.xlsx	
DTX-0055	NETGEAR-TRACK-009962	NETGEAR-TRACK-009962	NETGEAR Orbi Wifi-System Product	801-802
			Survey.xlsx	
DTX-0056	NETGEAR-TRACK-009963	NETGEAR-TRACK-009963	NETGEAR Pro Gaming Service.xlsx	801-802
DTX-0057	NETGEAR-TRACK-009964	NETGEAR-TRACK-009964	Nighthawk Pro Gaming Game Box - GJ.xlsx	801-802
DTX-0058	NETGEAR-TRACK-009965	NETGEAR-TRACK-009965	Nighthawk R7000 ReadyCLOUD Customer Giveaway.xlsx	801-802
DTX-0059	NETGEAR-TRACK-009966	NETGEAR-TRACK-009966	Nighthawk WiFi Router Installation - GJ.xlsx	801-802
DTX-0060	NETGEAR-TRACK-009967	NETGEAR-TRACK-009984	Settlement and Non-Exclusive Patent License	
			Agreement between Orostream LLC and	
			NETGEAR, dated April 30, 2018	
DTX-0061	NETGEAR-TRACK-009985	NETGEAR-TRACK-009985	Q223 Orbi Survey- US.xlsx	801-802
DTX-0062	NETGEAR-TRACK-009986	NETGEAR-TRACK-009986	Q322 Orbi Survey- US.xlsx	801-802
DTX-0063	NETGEAR-TRACK-009987	NETGEAR-TRACK-009987	Sales Data_11.06.23.xlsx	
DTX-0064	NETGEAR-TRACK-009988	NETGEAR-TRACK-009988	Services Forecast.xlsx	401-403
DTX-0065	NETGEAR-TRACK-009989	NETGEAR-TRACK-010002	Non-Exclusive Patent License and Settlement	801-802, 90
			Agreement between VeriFire Network	
			Solutions, LLC and NETGEAR, Inc., dated	
			January 7, 2016	
DTX-0066	NETGEAR-TRACK-010003	NETGEAR-TRACK-010003	WiFi 6 Survey - AM.xlsx	801-802
DTX-0067	NETGEAR-TRACK-010004	NETGEAR-TRACK-010027	Orbi Wall Plug, Smart mes Extender schematic	
			- RBR50 & RBS50_SCH_MB_R02.pdf	
DTX-0068	NETGEAR-TRACK-010028	NETGEAR-TRACK-010043	Schematic - RBW30_SCH_R03.pdf	
DTX-0069	NETGEAR-TRACK-010044	NETGEAR-TRACK-010062	Schematic - RBR40 RBS40_SCH_MB_R02.pdf	
DTX-0070	NETGEAR-TRACK-010063	NETGEAR-TRACK-010086	Orbi Pro schematic -	
			SRK60_SCH_MB_R01.pdf.pdf	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0071	NETGEAR-TRACK-010087	NETGEAR-TRACK-010104	Mini Orbi RBR20-100NAS schematic -	
			RBS20_SCH_MB_R02.pdf	
DTX-0072	NETGEAR-TRACK-010105	NETGEAR-TRACK-010117	Cable Orbi Block Diagram -	801-802, 901
			CBR40_SCH_CM_R02.pdf	
DTX-0073	NETGEAR-TRACK-010118	NETGEAR-TRACK-010134	Cable Orbi Block Diagram -	801-802, 901
			CBR40_SCH_MB_R02.pdf	
DTX-0074	NETGEAR-TRACK-010135	NETGEAR-TRACK-010139	3v3 System schematic -	
			RBS40V_SCH_DSPBRD_R01.pdf	
DTX-0075	NETGEAR-TRACK-010140	NETGEAR-TRACK-010145	Touch - DSP BTB schematic -	
			RBS40V_SCH_LEDBRD_R01.pdf	
DTX-0076	NETGEAR-TRACK-010146	NETGEAR-TRACK-010164	Wifi Main Board schematic -	
			RBS40V_SCH_MAINBRD_R01.pdf	
DTX-0077	NETGEAR-TRACK-010165	NETGEAR-TRACK-010186	SRC60-100 NAS schematic -	
			SRC60_SCH_MB_R01.pdf	
DTX-0078	NETGEAR-TRACK-010187	NETGEAR-TRACK-010209	RBK50V2-100NAS schematic -	
			RBR50V2_SCH_MB_R01.pdf	
DTX-0079	NETGEAR-TRACK-010210	NETGEAR-TRACK-010233	RBS50Y-100NAS schematic -	
			RBS50Y_SCH_MB_R02.pdf	
DTX-0080	NETGEAR-TRACK-010234	NETGEAR-TRACK-010247	NTGR Dual Band Mesh schematic -	
			RBR10_SCH_MB_R01.pdf	
DTX-0081	NETGEAR-TRACK-010248	NETGEAR-TRACK-010267	NightHawk Mesh 2.0 schematic -	
			MR60_MS60_SCH_MB_R01.pdf.pdf	
DTX-0082	NETGEAR-TRACK-010268	NETGEAR-TRACK-010304	OAK RBK750 schematic -	
			RBR750 SCH R01.pdf	
DTX-0083	NETGEAR-TRACK-010305	NETGEAR-TRACK-010316	RBS10-100NAS schematic -	
			FDP1_RBS10_SCH_R03.pdf	
DTX-0084	NETGEAR-TRACK-010317	NETGEAR-TRACK-010332	U12C409T00_Puma7_CE2703 Block Diagram -	801-802, 90
			CBR750 Cable board_SCH_R01.pdf	
DTX-0085	NETGEAR-TRACK-010333	NETGEAR-TRACK-010369	CBR750 Router Board schematic - CBR750	
			Router board_SCH_R01.pdf	

DTX	BegBates	EndBates	Description	TT Objection
DTX-0086	NETGEAR-TRACK-010370	NETGEAR-TRACK-010411	Schematic - RBR850_SCH_R02.pdf	
DTX-0087	NETGEAR-TRACK-010412	NETGEAR-TRACK-010453	Schematic - RBS850_SCH_R02.pdf	
DTX-0088	NETGEAR-TRACK-010454	NETGEAR-TRACK-010490	OAK RBK750 schematic - RBS750_SCH_R01.pdf	
DTX-0089	NETGEAR-TRACK-010491	NETGEAR-TRACK-010515	RBK352-100NAS schematic - RBR350_SCH_MB_R01.pdf	
DTX-0090	NETGEAR-TRACK-010516	NETGEAR-TRACK-010544	AX3600 AX WiFi mesh router schematic - MR80_SCH_R02.pdf	
DTX-0091	NETGEAR-TRACK-010545	NETGEAR-TRACK-010573	AX3600 AX WiFi mesh router schematic - MS80_SCH_R02.pdf	
DTX-0092	NETGEAR-TRACK-010574	NETGEAR-TRACK-010590	LBR20 schematic - LBR20_SCH_R01.pdf	
DTX-0093	NETGEAR-TRACK-010591	NETGEAR-TRACK-010627	RBR750 (Qorvo Version) schematic - RBR750_RBS750_SCH_R02.pdf	
DTX-0094	NETGEAR-TRACK-010628	NETGEAR-TRACK-010666	Schematic - NBR750_SCH_R025.pdf	
DTX-0095	NETGEAR-TRACK-010667	NETGEAR-TRACK-010716	Schematic - SXR_SXS80_SCH_R02.pdf.pdf	
DTX-0096	NETGEAR-TRACK-010717	NETGEAR-TRACK-010758	Hawkeye 2.0 schematic - RBRE960 MB SCH R01.pdf	
DTX-0097	NETGEAR-TRACK-010759	NETGEAR-TRACK-010768	Hawkeye 2.0 schematic - RBRE960_RBSE960_Module_SCH_R01.pdf	
DTX-0098	NETGEAR-TRACK-010769	NETGEAR-TRACK-010810	Hawkeye 2.0 schematic - RBSE960 MB SCH R01.pdf	
DTX-0099	NETGEAR-TRACK-010811	NETGEAR-TRACK-010841	RBR760 schematic - RBR760_SCH_MB_R01.pdf	
DTX-0100	NETGEAR-TRACK-010842	NETGEAR-TRACK-010872	RBK760 schematic - RBS760_SCH_MB_R01.pdf.pdf	
DTX-0101	NETGEAR-TRACK-010873	NETGEAR-TRACK-010903	SXR50 schematic - SXS50_SCH_MB_R01.pdf.pdf	
DTX-0102	NETGEAR-TRACK-010904	NETGEAR-TRACK-010923	NightHawk Mesh 2.0 schematic - MR70_SCH_MB_R01.pdf	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0103	NETGEAR-TRACK-010924	NETGEAR-TRACK-010943	NightHawk Mesh 2.0 schematic -	
			MS70_SCH_MB_R01.pdf	
DTX-0104	NETGEAR-TRACK-010944	NETGEAR-TRACK-010974	SXS50 schematic -	
			SXS50_SCH_MB_R01.pdf.pdf	
DTX-0105	NETGEAR-TRACK-010975	NETGEAR-TRACK-011016	HE2.0 schematic -	
			RBx860SB_RBx860S_SCH_R01.pdf	
DTX-0106	NETGEAR-TRACK-011070	NETGEAR-TRACK-011070	Metrics 2023-11-21.xlsx	401-403, 602, 801-
DTX-0107	NETGEAR-TRACK-011071	NETGEAR-TRACK-011071	Armor CO Summary Mar2019-Aug2023.xlsx	
DTX-0108	NETGEAR-TRACK-011072	NETGEAR-TRACK-011072	chip costs.xlsx	
DTX-0109	NETGEAR-TRACK-011073	NETGEAR-TRACK-011085	Settlement Agreement between XR	801-802, 901
			Communications, LLC, d/b/a Vivato	
			Technologies and NETGEAR, Inc., dated	
			September 28, 2023	
DTX-0110	NETGEAR-TRACK-011086	NETGEAR-TRACK-011107	WAC540-100NAS schematic -	
			WAC540_SCH_MB_R01.pdf	
DTX-0111	NETGEAR-TRACK-011108	NETGEAR-TRACK-011149	IPQ9574 Alder schematic -	
			RBE970_SCH_MB_R01.pdf	
DTX-0112	NETGEAR-TRACK-011150	NETGEAR-TRACK-011169	Waikiki Block Diagram -	801-802, 901
			RBE971_RBE970_SCH_WIFI_R01.pdf	
DTX-0113	NETGEAR-TRACK-011170	NETGEAR-TRACK-011211	IPQ9574 Alder schematic -	
			RBE971_SCH_MB_R01.pdf	
DTX-0114	NETGEAR-TRACK-011212	NETGEAR-TRACK-011212	NPD Data Analysis 2017-03-05.xlsx	801-802, 901
DTX-0115	NETGEAR-TRACK-011213	NETGEAR-TRACK-011213	NPD Data Analysis 2017-07-30.xlsx	801-802, 901
DTX-0116	NETGEAR-TRACK-011214	NETGEAR-TRACK-011214	NPD Data Analysis 2017-10-29.xlsx	801-802, 901
DTX-0117	NETGEAR-TRACK-011215	NETGEAR-TRACK-011215	NPD Data Analysis 2018-04-22.xlsx	801-802, 901
DTX-0118	NETGEAR-TRACK-011216	NETGEAR-TRACK-011216	NPD Data Analysis 2018-09-30.xlsx	801-802, 901
DTX-0119	NETGEAR-TRACK-011217	NETGEAR-TRACK-011217	NPD Data Analysis 2018-12-2.xlsx	801-802, 901

DTX	BegBates	EndBates	Description	TT Objections
DTX-0120	NETGEAR-TRACK-011218	NETGEAR-TRACK-011218	NPD Data Analysis 2019-02-10.xlsx	801-802, 901
DTX-0121	NETGEAR-TRACK-011219	NETGEAR-TRACK-011219	NPD Data Analysis 2019-06-02.xlsx	801-802, 901
DTX-0122	NETGEAR-TRACK-011220	NETGEAR-TRACK-011220	NPD Data Analysis 2019-11-24.xlsx	801-802, 901
DTX-0123	NETGEAR-TRACK-011221	NETGEAR-TRACK-011221	NPD Data Analysis 2020-03-01.xlsx	801-802, 901
DTX-0124	NETGEAR-TRACK-011222	NETGEAR-TRACK-011222	NPD Data Analysis 2020-05-31.xlsx	801-802, 901
DTX-0125	NETGEAR-TRACK-011223	NETGEAR-TRACK-011223	NPD Data Analysis 2020-10-25.xlsx	801-802, 901
DTX-0126	NETGEAR-TRACK-011224	NETGEAR-TRACK-011224	NPD Data Analysis 2021-01-24.xlsx	801-802, 901
DTX-0127	NETGEAR-TRACK-011225	NETGEAR-TRACK-011225	NPD Data Analysis 2021-06-06.xlsx	801-802, 901
DTX-0128	NETGEAR-TRACK-011226	NETGEAR-TRACK-011226	NPD Data Analysis 2021-08-22.xlsx	801-802, 901
DTX-0129	NETGEAR-TRACK-011227	NETGEAR-TRACK-011227	NPD Data Analysis 2022-02-06.xlsx	801-802, 901
DTX-0130	NETGEAR-TRACK-011228	NETGEAR-TRACK-011228	NPD Data Analysis 2022-04-24.xlsx	801-802, 901
DTX-0131	NETGEAR-TRACK-011229	NETGEAR-TRACK-011229	NPD Data Analysis 2022-06-12.xlsx	801-802, 901
DTX-0132	NETGEAR-TRACK-011230	NETGEAR-TRACK-011230	NPD Data FY22-FY23.xlsx	801-802, 901
DTX-0133	NETGEAR-TRACK-011231	NETGEAR-TRACK-011231	Wifi System Products_From 2017 Apr 6.xls	
DTX-0134	NETGEAR-TRACK-011232	NETGEAR-TRACK-011232	Sales Data_Additional_01.10.24.xlsx	
DTX-0135	NETGEAR-TRACK-011233			
DTX-0136	NETGEAR-TRACK-011234			
DTX-0137	NETGEAR-TRACK-011235	NETGEAR-TRACK-011240	Rockspace AC1200 Wi-Fi Range Extender (https://rockspaceworld.com/collections/rang e-extender/products/ac1200-wifi-range-extender; https://bit.ly/3UKzMVr)	602, 801-802, 901

DTX	BegBates	EndBates	Description	TT Objections
DTX-0138	NETGEAR-TRACK-011241	NETGEAR-TRACK-011245	ALOHAnet (https://www.eng.hawaii.edu/about/history/alohanet)	401-403, 602, 801-802, 901
DTX-0139	NETGEAR-TRACK-011246	NETGEAR-TRACK-011253	Todaair 1200Mbps WiFi Range Extender (https://www.amazon.com/1200Mbps-Extender-Booster-Repeater-Ethernet/dp/B0CG5P84QK/ref=sr_1_12_sspa? crid=11TD3NVJDTP8A&keywords=tp%E2%80% A6&th=1; https://amzn.to/49zk17L)	602, 801-802, 901
DTX-0140	NETGEAR-TRACK-011254	NETGEAR-TRACK-011261	Amped REC33A Wirless High Power Plug-in AC1750 Wi-Fi Range Extender (https://www.amazon.com/Amped-REC33A-Wireless-AC1750-Extender/dp/B00TKFDYIQ?th=1; https://amzn.to/3ul1uqW)	602, 801-802, 901
DTX-0141	NETGEAR-TRACK-011262	NETGEAR-TRACK-011269	Davuaz AX1800 WiFi 6 Extender, Wireless Signal Booster (https://www.amazon.com/Davuaz-Extender-Wireless-Coverage-1800Mbps/dp/B0C53P15XQ?th=1; https://amzn.to/42D7Nss)	602, 801-802, 901

DTX	BegBates	EndBates	Description	TT Objections
DTX-0142	NETGEAR-TRACK-011270	NETGEAR-TRACK-011277	Amazon.com, Linksys RE9000: AC3000 Tri-Band Wi-Fi Extender (https://www.amazon.com/Linksys-Max-Stream-Tri-Band-Extender- RE9000/dp/B076ZHXK6J/ref=sr_1_4?crid=3E0 10RUGLGKNN&keywords=Linksys+RE9000&qi d=1700150373&s=electronics&sprefix=linksys +re9000,electronics,88&sr=1-4; https://amzn.to/3OH1deO)	602, 801-802, 901
DTX-0143	NETGEAR-TRACK-011278	NETGEAR-TRACK-011283	Amazon.com, NETGEAR Orbi Pro WiFi 6 Mini Add-on Satellite (SXS30), https://amzn.to/3UEgGQs	602, 801-802, 901
DTX-0144	NETGEAR-TRACK-011284	NETGEAR-TRACK-011291	Amazon.com, NETGEAR WiFi Range Extender EX5000 (https://www.amazon.com/NETGEAR-WiFi-Range-Extender-EX5000/dp/B083R46CV8?ref_=ast_sto_dp&th =1; https://amzn.to/4bCEREZ)	602, 801-802, 901
DTX-0145	NETGEAR-TRACK-011292	NETGEAR-TRACK-011299	TP-Link Deco AX3000 WiFi 6 Mesh System, https://www.amazon.com/WiFi-6-Mesh-System-AX3000/dp/B09WTM34DF/ref=sr_1_3?crid=17ME7F6WZX6FT&keywords=mesh%2Bnetwork&qid=1706741315&s=electronics&sprefix=mesh%2Bnetwork%2Celectronics%2C295&sr=1-3&ufe=app_do%3Aamzn1.fos.f5122f16-c3e8-4386-bf32-63e904010ad0&th=1	602, 801-802, 901

DTX	BegBates	EndBates	Description	TT Objections
DTX-0146	NETGEAR-TRACK-011300	NETGEAR-TRACK-011304	Amazon.com, Rockspace WiFi Extender 1200Mbps - Signal Booster for Home (https://www.amazon.com/Extender- 1200Mbps-Extenders-Repeater- Amplifier/dp/B0BYSRTQNQ/ref=sr_1_49_sspa ?keywords=wifi%2Bextender%2B-mesh%2B- mesh%2B- onemesh&qid=1700089887&s=electronics&sr =1-49- spons&sp_csd=d2lkZ2V0TmFtZT1zcF9hdGZfb mV4dA&th=1; https://amzn.to/3UGmiKi)	602, 801-802, 901
DTX-0147	NETGEAR-TRACK-011305	NETGEAR-TRACK-011305	BELabs, About Be Labs, https://www.belabs.com/index.html	401-403, 602, 801-802, 901
DTX-0148	NETGEAR-TRACK-011306	NETGEAR-TRACK-011317	Best Wi-Fi Extenders, https://www.ign.com/articles/best-wifi- extender	602, 801-802, 901
DTX-0149	NETGEAR-TRACK-011318	NETGEAR-TRACK-011320	DocketNavigator case search - BE Labs, Inc. (https://search.docketnavigator.com/patent/party/227263/3)	401-403, 602, 801-802, 901
DTX-0150	NETGEAR-TRACK-011321	NETGEAR-TRACK-011321	DocketNavigator patent search - BE Labs, Inc. (https://search.docketnavigator.com/patent/party/227263/4)	401-403, 602, 801-802, 901
DTX-0151	NETGEAR-TRACK-011322	NETGEAR-TRACK-011322	DocketNavigator case search - Frequency Systems, LLC (https://search.docketnavigator.com/patent/party/105503/3)	401-403, 602, 801-802, 901
DTX-0152	NETGEAR-TRACK-011323	NETGEAR-TRACK-011323	DocketNavigator patent search - Frequency Systems, LLC (https://search.docketnavigator.com/patent/p	401-403, 602, 801-802, 901

arty/105503/4)

DTX	BegBates	EndBates	Description	TT Objections
DTX-0153	NETGEAR-TRACK-011324	NETGEAR-TRACK-011324	DocketNavigator patent search - Mentone	401-403, 602,
			Solutions LLC	801-802, 901
			(https://search.docketnavigator.com/patent/p	
			arty/469140/4)	
DTX-0154	NETGEAR-TRACK-011325	NETGEAR-TRACK-011326	DocketNavigator case search - Mentone	401-403, 602,
			Solutions LLC	801-802, 901
			(https://search.docketnavigator.com/patent/p	
			arty/469140/3)	
DTX-0155	NETGEAR-TRACK-011327	NETGEAR-TRACK-011328	DocketNavigator case search - Orostream LLC	401-403, 602,
			(https://search.docketnavigator.com/patent/p	801-802, 901
			arty/103873/3)	
DTX-0156	NETGEAR-TRACK-011329	NETGEAR-TRACK-011329	DocketNavigator patent search - Orostream	401-403, 602,
			LLC	801-802, 901
			(https://search.docketnavigator.com/patent/p	
			arty/103873/4)	
DTX-0157	NETGEAR-TRACK-011330	NETGEAR-TRACK-011330	DocketNavigator case search - TrackThings LLC	401-403, 602,
			(https://search.docketnavigator.com/patent/p	801-802, 901
			arty/711821/3)	
DTX-0158	NETGEAR-TRACK-011331	NETGEAR-TRACK-011331	DocketNavigator case search - Wireless	401-403, 602,
			Transport LLC	801-802, 901
			(https://search.docketnavigator.com/patent/p	
			arty/525675/3)	
DTX-0159	NETGEAR-TRACK-011332	NETGEAR-TRACK-011332	DocketNavigator patent search - Wireless	401-403, 602,
			Transport LLC	801-802, 901
			(https://search.docketnavigator.com/patent/p	
			arty/525675/4)	
DTX-0160	NETGEAR-TRACK-011333	NETGEAR-TRACK-011337	Home - TrackThings LLC	801-802, 901
			(https://web.archive.org/web/202203112255	
			30/https://www.trackthings.tech/)	
DTX-0161	NETGEAR-TRACK-011338	NETGEAR-TRACK-011344	Home - TrackThings LLC	801-802, 901
			(https://web.archive.org/web/202203112255	
			30/https://www.trackthings.tech/)	
			, ,	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0162	NETGEAR-TRACK-011345	NETGEAR-TRACK-011347	NETGEAR Support, How Do I Install My NETGEAR Nighthawk Mesh WiFi 6 Products, https://kb.netgear.com/000061554/How-do-I- install-my-NETGEAR-Nighthawk-Mesh- WiFi-6- products	801-802
DTX-0163	NETGEAR-TRACK-011348	NETGEAR-TRACK-011350	YouTube page for How to Set Up Orbi With the Orbi App   NETGEAR, https://www.youtube.com/watch?v=s1UJPCanvr4	801-802, 901
DTX-0164	NETGEAR-TRACK-011351	NETGEAR-TRACK-011351	YouTube Video - How to Set Up Orbi With the Orbi App _ NETGEAR.mp4	801-802, 901
DTX-0165	NETGEAR-TRACK-011352	NETGEAR-TRACK-011354	YouTube page for How to Set Up the Nighthawk Mesh WiFi 6 Sysem by NETGEAR, https://www.youtube.com/watch?v=PwIU3-67pzQ	801-802, 901
DTX-0166	NETGEAR-TRACK-011355	NETGEAR-TRACK-011355	YouTube Video - How to Set Up the Nighthawk Mesh WiFi 6 System by NETGEAR.mp4	801-802, 901
DTX-0167	NETGEAR-TRACK-011356	NETGEAR-TRACK-011356	Amped Wireless product comparison (https://www.ampedwireless.com/pub/media/wysiwyg/amped/products/rec33acompare.png; https://bit.ly/3IHCZxO)	602, 801-802, 901
DTX-0168	NETGEAR-TRACK-011357	NETGEAR-TRACK-011362	NETGEAR Armor, https://www.netgear.com/home/services/ar mor/	801-802, 901
DTX-0169	NETGEAR-TRACK-011363	NETGEAR-TRACK-011365	NETGEAR ProSupport for Home, https://www.netgear.com/home/services/pro support/	801-802, 901

DTX	BegBates	EndBates	Description	TT Objections
DTX-0170	NETGEAR-TRACK-011366	NETGEAR-TRACK-011377	NETGEAR Reports Fourth Quarter and Full Year 2023 Results (https://investor.netgear.com/releases/press- release-details/2024/NETGEAR-Reports- Fourth-Quarter-and-Full-Year-2023- Results/default.aspx; https://bit.ly/4a7y1WG)	
DTX-0171	NETGEAR-TRACK-011378	NETGEAR-TRACK-011383	Whole Home Mesh WiFi, https://www.netgear.com/home/wifi/mesh	602, 801-802, 901
DTX-0172	NETGEAR-TRACK-011384	NETGEAR-TRACK-011385	Press Release, New Orbi WiFi System from NETGEAR Delights with Whole-Home High-Speed WiFi, https://www.netgear.com/about/press-releases/2016/new-orbi-wifi-system- from-netgear/	602, 801-802, 901
DTX-0173	NETGEAR-TRACK-011386	NETGEAR-TRACK-011387	Press Release, NETGEAR, The Leader in Mesh WiFi, Pushes the Transition from WiFi 6 With the New Nighthawk Mesh WiFi System, https://www.netgear/com/about/press-releases/2020/nighthawk-mesh-wifi	602, 801-802, 901
DTX-0174	NETGEAR-TRACK-011388	NETGEAR-TRACK-011395	NETGEAR Nighthawk Tri-band WiFi 6 Mesh System, https://www.netgear.com/home/wifi/mesh/ mk83/	602, 801-802, 901

DTX	BegBates	EndBates	Description	TT Objections
DTX-0175	NETGEAR-TRACK-011396	NETGEAR-TRACK-011399	No more dead zones in the home: meet the NETGEAR Orbi Wi-Fi System, https://www.qualcomm.com/news/onq/2016/10/no-more-dead-zones-home-meet-netgear-orbi-wi-fi-system	602, 801-802, 901
DTX-0176	NETGEAR-TRACK-011400	NETGEAR-TRACK-011402	Internet World Stats News, One Billion Internet Users, https://www.internetworldstats.com/pr/edi0 14.htm	602, 801-802, 901
DTX-0177	NETGEAR-TRACK-011403	NETGEAR-TRACK-011410	NETGEAR Orbi 860 Series Tri-Band WiFi 6 Mesh System, https://www.netgear.com/home/wifi/mesh/r bk863sb/?cid=us-best-wifi6-srch- cpc&utm_source=search&utm_medium=cpc& utm_campaign=us-best-wifi6-srch- cpc&gad_source=1&gclid=Cj0KCQiA2eKtBhDc ARISAEG%E2%80%A6	602, 801-802, 901
DTX-0178	NETGEAR-TRACK-011411	NETGEAR-TRACK-011415	NETGEAR Smart Parental Controls, https://www.netgear.com/home/services/smart-parental-controls/	801-802, 901
DTX-0179	NETGEAR-TRACK-011416	NETGEAR-TRACK-011416	Introduction to Wireless, https://cs.stanford.edu/people/eroberts/cour ses/soco/projects/2003-04/wireless- computing/index.shtml	602, 801-802, 901
DTX-0180	NETGEAR-TRACK-011417	NETGEAR-TRACK-011421	Stations - National Pony Express Association, https://nationalponyexpess.org/historic-pony- express-trail/stations/	602, 801-802, 901

DTX	BegBates	EndBates	Description	TT Objections
DTX-0181	NETGEAR-TRACK-011422	NETGEAR-TRACK-011441	Todaair.com, TD-4G-1MW V3.1, https://www.todaair.com/td-4g-1mw-v3-1/	401-403, 602, 801-802, 901
DTX-0182	NETGEAR-TRACK-011442	NETGEAR-TRACK-011443	TrackThings LLC - Patents for Sale, https://web.archive.org/web/2018090319115 9/https://www.trackthings.tech/	1-403, 602, 801-802,
DTX-0183	NETGEAR-TRACK-011444	NETGEAR-TRACK-011448	TrackThings LLC - Patents for Sale, https://web.archive.org/web/2018090319115 9/https://www.trackthings.tech/	1-403, 602, 801-802,
DTX-0184	NETGEAR-TRACK-011449	NETGEAR-TRACK-011455	Tri-Band & Quad-Band Routers, https://www.netgear.com/home/wifi/mesh/tr i-band-quad-band	602, 801-802, 901
DTX-0185	NETGEAR-TRACK-011456	NETGEAR-TRACK-011472	U.S. Patent No. 5,768,508	401-403, 602
DTX-0186	NETGEAR-TRACK-011473	NETGEAR-TRACK-011481	U.S. Patent No. 6,563,813	401-403, 602
DTX-0187	NETGEAR-TRACK-011482	NETGEAR-TRACK-011492	U.S. Patent No. 6,952,413	401-403, 602
DTX-0188	NETGEAR-TRACK-011493	NETGEAR-TRACK-011507	U.S. Patent No. 7,827,581	401-403, 602
DTX-0189	NETGEAR-TRACK-011508	NETGEAR-TRACK-011524	U.S. Patent No. 8,417,205	401-403, 602
DTX-0190	NETGEAR-TRACK-011525	NETGEAR-TRACK-011539	U.S. Patent No. 9,344,183	401-403, 602

DTX	BegBates	EndBates	Description	TT Objections
DTX-0191	NETGEAR-TRACK-011540	NETGEAR-TRACK-011541	NETGEAR, What is daisy chain and how does it work with my Orbi WiFi System or Nighthawk Mesh System?, https://kb.netgear/com/000048458/What-is-daisy-chain-and-how-does-it-work-with-my-Orbi-WiFi-System-or-Nighthawk-Mesh-System	602, 801-802, 901
DTX-0192	NETGEAR-TRACK-011542	NETGEAR-TRACK-011551	What is Mesh WiFi?, https://www.netgear/com/hub/technology/w hat-is-mesh-wifi	801-802, 901
DTX-0193	NETGEAR-TRACK-011552	NETGEAR-TRACK-011554	NETGEAR About Us, https://www.netgear.com/about/	801-802, 901
DTX-0194	NETGEAR-TRACK-011555	NETGEAR-TRACK-011559	NETGEAR Support, Where should I place my Orbi satellite?, https://kb.netgear.com/31029/Where-should- I-place-my-Orbi-satellite	801-802, 901
DTX-0195	NETGEAR-TRACK-011560	NETGEAR-TRACK-011564	Fierce Electronics, Wireless Mesh Networks, https://www.fierceelectronics.com/components/wireless-mesh-networks	602, 801-802, 901
DTX-0196	NETGEAR-TRACK-011565		Trackthings_Sales Data_2nd Additional_updated through Feb'25.xlsx	
DTX-0197	NETGEAR-TRACK-011566		Trackthings_Sales Data_Additional_updated through Feb'25.xlsx	
DTX-0198	NETGEAR-TRACK-011567		Trackthings_Sales Data_updated through Feb'25.xlsx	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0199	NETGEAR-TRACK-011568	NETGEAR-TRACK-011575	Ahmed, Farooq, et al, Wireless Mesh Network, International Journal of Computer Science and Information Security (IJCSIS), 14(12):803-809 (Dec. 2016) ("Ahmed 2016")	
DTX-0200	NETGEAR-TRACK-011576	NETGEAR-TRACK-011583	Akyildiz, Ian F., and Xudong Wang, A Survey on Wireless Mesh Networks, IEEE Radio Communications, 43:S23-S30 at S23 (Sept. 2005) ("Akyildiz & Wang")	602, 801-802, 901, U
DTX-0201	NETGEAR-TRACK-011584	NETGEAR-TRACK-011626	Akyildiz, Ian F., et al., Wireless mesh networks: a survey, Computer Networks, 47:445-487 at 450 (2005) ("Akyildiz 2005")	602, 801-802, 901, U
DTX-0202	NETGEAR-TRACK-011627	NETGEAR-TRACK-011638	Understanding the Problem: Thick Walls and Weak WiFi Signals, Netgear, https://www.netgear.com/hub/wifi/mesh/mesh-for-thick-walls/	602, 801-802, 901
DTX-0203	NETGEAR-TRACK-011639	NETGEAR-TRACK-011669	Qadir, Junaid, et al., Building programmable wireless networks: an architectural survey, EURASIP Journal on Wireless Communications and Networking 2014:172, pp. 1-31 (2014)	602, 801-802, 901, U
DTX-0204	NETGEAR-TRACK-011670	NETGEAR-TRACK-011670	eero 6+ Data Sheet	401-403, 602, 801-802, 901, MIL,
DTX-0205	NETGEAR-TRACK-011671	NETGEAR-TRACK-011672	eero and eero Beacon – 2nd gen Data Seet	401-403, 602, 801-802, 901, MIL,
DTX-0206	NETGEAR-TRACK-011673	NETGEAR-TRACK-011681	eero Beacon, https://eero.com/shop/eero- beacon	401-403, 602, 801-802, 901, MIL,

DTX	BegBates	EndBates	Description	TT Objections
DTX-0207	NETGEAR-TRACK-011682	NETGEAR-TRACK-011682	eero Max 7 Data Sheet	401-403, 602,
				801-802, 901, MIL, L
DTX-0208	NETGEAR-TRACK-011683	NETGEAR-TRACK-011684	eero PoE 6 Data Sheet	401-403, 602,
				801-802, 901, MIL, L
DTX-0209	NETGEAR-TRACK-011685	NETGEAR-TRACK-011686	eero 6 Data Sheet	401-403, 602,
				801-802, 901, MIL, L
DTX-0210	NETGEAR-TRACK-011687	NETGEAR-TRACK-011688	eero Pro 6 Data Sheet	401-403, 602,
				801-802, 901, MIL, U
DTX-0211	NETGEAR-TRACK-011689	NETGEAR-TRACK-011690	eero Pro 6E Data Sheet	401-403, 602,
				801-802, 901, MIL, U
DTX-0212	NETGEAR-TRACK-011691	NETGEAR-TRACK-011698	Hamidian, Ali, et al., Deployment and	401-403, 602,
			Evaluation of a Wireless Mesh Network, 2009	801-802, 901, MIL, U
			Second	
			International Conference on Advances in	
			Mesh Networks, IEEE, pp. 66-72 at 66 (2009)	
DTX-0213	NETGEAR-TRACK-011699	NETGEAR-TRACK-011750	Mozaffariahrar, Erfan, et al., A Survey of Wi-Fi	401-403, 602,
			6: Technologies, Advances, and Challenges,"	801-802, 901, MIL, U
			Future Internet, 14:293, pp. 1-52 at 2 (2022)	
DTX-0214	NETGEAR-TRACK-011751	NETGEAR-TRACK-011751	Orbi Pro WiFi 6 Family Data Sheet	801-802, U
DTX-0215	NETGEAR-TRACK-011752	NETGEAR-TRACK-011757	Router Security, Netgear,	602, 801-802, 901, l
			https://www.netgear.com/security/	
DTX-0216	NETGEAR-TRACK-011758	NETGEAR-TRACK-011764	Sichitiu, Mihail L., Wireless Mesh Networks:	401-403, 602,
			Opportunities and Challenges, Proceedings of	U
			World Wireless Congress, Vol. 2., pp. 1-6 at 2	
			(2005) ("Sichitiu 2005")	
			, , ,	
DTX-0217	NETGEAR-TRACK-011765	NETGEAR-TRACK-011843	U.S. Patent No. 10,278,179	401-403, 602, U
DTX-0218	NETGEAR-TRACK-011844	NETGEAR-TRACK-011865	U.S. Patent No. 10,681,698	401-403, 602, U
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DTX	BegBates	EndBates	Description	TT Objections
DTX-0219	NETGEAR-TRACK-011866	NETGEAR-TRACK-011887	U.S. Patent No. 9,967,884	401-403, 602, U
DTX-0220	NETGEAR-TRACK-011888	NETGEAR-TRACK-011903	Wiggins, Roberta, Myths and Realities of Wi-Fi Mesh Networking, Yankee Group Report at 3 (Feb. 2006)	602, 801-802, 901, U
DTX-0221	NETGEAR-TRACK-011904	NETGEAR-TRACK-011911	The Second Generation of eero, https://blog.eero.com/the-second-generation- of-eero/	401-403, 602, 801-802, 901, MIL, U
DTX-0222	NETGEAR-TRACK-011912	NETGEAR-TRACK-011916	eero Beachon, https://eero.com/shop/eero- beacon?srsltid=AfmBOopQGG8wGn2e4zAA4S wCXCz6yZBe0oTQm_kWY5hymQPAoxOtV23S	401-403, 602, 801-802, 901, MIL, U
DTX-0223	NETGEAR-TRACK-011917	NETGEAR-TRACK-011925	TrackThings LLC v. Amazon.com, Inc. , No. 6:23-cv-133-ADA, D.I. 203 (Verdict Form)	401-403, 801-802, 901, MIL, U
DTX-0224	NETGEAR-TRACK-011926	NETGEAR-TRACK-012229	TrackThings LLC v. Amazon.com, Inc. , 6:23-cv-133-ADA, D.I. 215 (Oct. 7, 2024 Trial Transcript)	401-403, 801-802, 901, MIL, U
DTX-0225	NETGEAR-TRACK-PA-000001	NETGEAR-TRACK-PA-000002	NETGEAR 108 Mbps Wireless USB 2.0 adapter WG111T data sheet - WG111T_ds_23Nov04.pdf	801-802
DTX-0226	NETGEAR-TRACK-PA-000003	NETGEAR-TRACK-PA-000004	NETGEAR 108 Mbps Wireless USB 2.0 Adapter WG111T installation guide - WG111T_IG_0Jan07.pdf	801-802
DTX-0227	NETGEAR-TRACK-PA-000005	NETGEAR-TRACK-PA-000053	NETGEAR 108 Mbps Wireless USB 2.0 Adapter WG111T User Manual - WG111T_UM_04Feb07.pdf	801-802

DTX	BegBates	EndBates	Description	TT Objections
DTX-0228	NETGEAR-TRACK-PA-000054	NETGEAR-TRACK-PA-000055	NETGEAR 108 Mbps Wireless PCI Adapter WG311T data sheet - WG311T_datasheet_14Jan2004.pdf	801-802
DTX-0229	NETGEAR-TRACK-PA-000056	NETGEAR-TRACK-PA-000057	NETGEAR 108 Mbps Wireless PCI Adapter WG311T installation guide - WG311T_IG_17May07.pdf	801-802
DTX-0230	NETGEAR-TRACK-PA-000058	NETGEAR-TRACK-PA-000105	NETGEAR 108 Mbps Wireless PCI Adapter WG311T user manual - WG311T_UM_04Feb07.pdf	801-802
DTX-0231	NETGEAR-TRACK-PA-000106	NETGEAR-TRACK-PA-000107	NETGEAR 108 Mbps Wireless PC Card WG511T data sheet - WG511T_datasheet_03Dec2003.pdf	801-802
DTX-0232	NETGEAR-TRACK-PA-000108	NETGEAR-TRACK-PA-000109	NETGEAR 108 Mbps Wireless PC Card WG511T installation guide - WG511T_IG_15Jan07.pdf	801-802
DTX-0233	NETGEAR-TRACK-PA-000110	NETGEAR-TRACK-PA-000157	NETGEAR 108 Mbps Wireless PC Card WG511T user manual - WG511T_UM_12Feb07.pdf	801-802
DTX-0234	NETGEAR-TRACK-PA-000158	NETGEAR-TRACK-PA-000159	NETGEAR 108 Mbps Wireless Firewall Router WGT624 data sheet - WGT624_datasheetAtheroslogo_04Nov2003.p df	801-802
DTX-0235	NETGEAR-TRACK-PA-000160	NETGEAR-TRACK-PA-000161	NETGEAR 108 Mbps Wireless Firewall Router WGT624 installation guide - wgt624_install_guide.pdf	801-802
DTX-0236	NETGEAR-TRACK-PA-000162	NETGEAR-TRACK-PA-000313	Reference Manual for the NETGEAR 108 Mbps Wireless Firewall Router WGT624 - wgt624_ref_manual.pdf	801-802

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DTX-0237	NETGEAR-TRACK-PA-000314	NETGEAR-TRACK-PA-000465	Reference Manual for the NETGEAR 108 Mbps Wireless Firewall Router WGT624 v2 - wgt624v2l_manual.pdf	801-802
DTX-0238	NETGEAR-TRACK-PA-000466	NETGEAR-TRACK-PA-000467	NETGEAR 108 Mbps Wireless Firewall Router WGT624 data sheet - WGT624v2_Datasheet_13Feb2004.pdf	801-802
DTX-0239	NETGEAR-TRACK-PA-000468	NETGEAR-TRACK-PA-000469	NETGEAR 108 Mbps Wireless Firewall Router WGT624 installation guide - wgt624_install_guide.pdf	801-802
DTX-0240	NETGEAR-TRACK-PA-000470	NETGEAR-TRACK-PA-000471	NETGEAR 108 Mbps Wireless Router with 4- port 10/100 Mbps Switch data sheet - WGT624v3h1_ds_12May05.pdf	801-802
DTX-0241	NETGEAR-TRACK-PA-000472	NETGEAR-TRACK-PA-000619	Reference Manual for the NETGEAR 108 Mbps Firewall Router WGT624 v3 - wgt624v3_ref_manual_25Apr05.pdf	801-802
DTX-0242	NETGEAR-TRACK-PA-000620	NETGEAR-TRACK-PA-000628	Home Network Security Services Quick Start Guide - wgt624_install_guide.pdf	801-802
DTX-0243	NETGEAR-TRACK-PA-000629	NETGEAR-TRACK-PA-000630	NETGEAR 108 Mbps Wireless Storage Router WGT634U data sheet - WGT634U_ds_05Nov04.pdf	801-802
DTX-0244	NETGEAR-TRACK-PA-000631	NETGEAR-TRACK-PA-000635	NETGEAR 108 Mbps Wireless Storage Router WGT634U installation guide - wgt634u_install_guide.pdf	801-802
DTX-0245	NETGEAR-TRACK-PA-000636	NETGEAR-TRACK-PA-000815	Reference Manual for the NETGEAR 108 Mbps Wireless Media Router WGT634U - FullManual.pdf	801-802

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DTX	BegBates	EndBates	Description	TT Objections
DTX-0246	NETGEAR-TRACK-PA-000816	NETGEAR-TRACK-PA-000817	NETGEAR Double 108 Mbps Wireless Firewall Router WGU624 data sheet - WGU624_ds_12Oct04.pdf	801-802
DTX-0247	NETGEAR-TRACK-PA-000818	NETGEAR-TRACK-PA-000995	Reference Manual for the NETGEAR Double 108 Mbps Wireless Firewall Router WGU624 - wgu624_ref_manual.pdf	801-802
DTX-0248	NETGEAR-TRACK-PA-000996	NETGEAR-TRACK-PA-000997	NETGEAR WGU624 setup guide - wgu624_setup_guide.pdf	801-802
DTX-0249	NETGEAR-TRACK-PA-000998	NETGEAR-TRACK-PA-002166	IEEE Standard 802.15.1 - Bluetooth Specification (802.15.1).pdf	401-403, 602, 801-802, 901
DTX-0250	NETGEAR-TRACK-PA-002167	NETGEAR-TRACK-PA-002188	Chang and Chang, TARP: A traffic-aware restructuring protocol for Bluetooth radio networks, Computer Networks 51 (2007) 4070-4091	401-403, 602, 801-802, 901
DTX-0251	NETGEAR-TRACK-PA-002189	NETGEAR-TRACK-PA-003270	Core Specification of the Bluetooth System v1.0B, December 1, 1999	401-403, 602, 801-802, 901, MIL
DTX-0252	NETGEAR-TRACK-PA-003271	NETGEAR-TRACK-PA-003280	Koskinen et al., On Improving Connectivity of Static Ad-Hoc Networks by Adding Nodes	401-403, 602, 801-802, 901
DTX-0253	NETGEAR-TRACK-PA-003281	NETGEAR-TRACK-PA-003282	NETGEAR ProSafe Wireless 802.11g Firewall Model FVG318 installation guide - fvg318_install_guide.pdf	801-802
DTX-0254	NETGEAR-TRACK-PA-003283	NETGEAR-TRACK-PA-003458	NETGEAR ProSafe 802.11g Wireless VPN Firewall FVG318 Reference Manual - FVG318_RM_09Oct07.pdf	801-802
DTX-0255	NETGEAR-TRACK-PA-003459	NETGEAR-TRACK-PA-003460	NETGEAR ProSafe 802.11g Wireless VP Firewall FVG318 installation guide - FVG318_IG_20Dec07.pdf	801-802

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DTX-0256	NETGEAR-TRACK-PA-003461	NETGEAR-TRACK-PA-003636	NETGEAR ProSafe 802.11g Wireless VPN Firewall FVG318 Reference Manual - FVG318_RM_09Oct07.pdf	801-802
DTX-0257	NETGEAR-TRACK-PA-003637	NETGEAR-TRACK-PA-003638	NETGEAR 802.11b ProSafe Wireless Access Point ME103 data sheet - ME103_datasheet.pdf	801-802
DTX-0258	NETGEAR-TRACK-PA-003639	NETGEAR-TRACK-PA-003640	NETGEAR 802.11b ProSafe Wireless Access Point ME 103 installation guide - ME103_InsGuide.pdf	801-802
DTX-0259	NETGEAR-TRACK-PA-003641	NETGEAR-TRACK-PA-003758	Reference Manual for the ME103 802.11b ProSafe Wireless Access Point - me103_reference_3_16.pdf	801-802
DTX-0260	NETGEAR-TRACK-PA-003759	NETGEAR-TRACK-PA-003827	Reference Manual for the ProSafe Network Management System NMS100 - nms100_prosafe_ref_manual.pdf	801-802
DTX-0261	NETGEAR-TRACK-PA-003828	NETGEAR-TRACK-PA-003829	NETGEAR ProSafe Wireless Access Point 802.11g WG102 data sheet - WG102_ds_24Nov04_v2.pdf	801-802
DTX-0262	NETGEAR-TRACK-PA-003830	NETGEAR-TRACK-PA-003831	NETGEAR WG102 ProSafe 802.11g WG102 Wireless Access Point installation guide - 802.11g WG102 data sheet - wg102_install_guide.pdf	801-802
DTX-0263	NETGEAR-TRACK-PA-003832	NETGEAR-TRACK-PA-003901	NETGEAR ProSafe 802.11g Wireless Access Point WG102 Reference Manual - wg102_ref_manual_5_0_0.pdf	801-802
DTX-0264	NETGEAR-TRACK-PA-003902	NETGEAR-TRACK-PA-003903	NETGEAR ProSafe Wireless Access Point 802.11g WG302 data sheet - WG302_ds_28April05.pdf	801-802

DTX	BegBates	EndBates	Description	TT Objections
DTX-0265	NETGEAR-TRACK-PA-003904	NETGEAR-TRACK-PA-003905	NETGEAR 802.11g ProSafe Wireless Access Point WG302 installation guide - wg302_install_guide (1).pdf	801-802
DTX-0266	NETGEAR-TRACK-PA-003906	NETGEAR-TRACK-PA-004003	NETGEAR ProSafe 802.11g Wireless Access Point WG302 Reference Manual - WG302_RM_12MAY06.pdf	801-802
DTX-0267	NETGEAR-TRACK-PA-004004	NETGEAR-TRACK-PA-004105	NETGEAR ProSafe 802.11g Wireless Access Point WG302v2 Reference Manual - wg302v2_ref_manual_15may06.pdf	801-802
DTX-0268	NETGEAR-TRACK-PA-004106	NETGEAR-TRACK-PA-004107	NETGEAR ProSafe Wireless Access Point 802.11g WG302 data sheet - WG302_ds_27June06.pdf	801-802
DTX-0269	NETGEAR-TRACK-PA-004108	NETGEAR-TRACK-PA-004109	NETGEAR 802.11g ProSafe Wireless Access Point WG302 installation giude - wg302_install_guide.pdf	801-802
DTX-0270	NETGEAR-TRACK-PA-004110	NETGEAR-TRACK-PA-004159	NETGEAR RangeMax NEXT Wireless-N Modem Router Setup Manual - DG834Nv2_SMv1.4_23Jun08.pdf	801-802
DTX-0271	NETGEAR-TRACK-PA-004160	NETGEAR-TRACK-PA-004161	NETGEAR RangeMax ADSL Modem Wireless Router DG834PN data sheet - DG834PN_ds_11Nov05.pdf	801-802
DTX-0272	NETGEAR-TRACK-PA-004162	NETGEAR-TRACK-PA-004265	Reference Manual for the DG834PN RangeMax ADSL Modem Wireless Router - dg834pn_ref_manual_11Nov05.pdf	801-802

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DTX	BegBates	EndBates	Description	TT Objections
DTX-0273	NETGEAR-TRACK-PA-004266	NETGEAR-TRACK-PA-004267	NETGEAR RangeMax NEXT Wireless-N USB 2.0 Adapter WN121T data sheet - WN121T-DS_29Aug06.pdf	801-802
DTX-0274	NETGEAR-TRACK-PA-004268	NETGEAR-TRACK-PA-004269	NETGEAR Wireless USB 2.0 Adapter Model WN121T installation guide - WN121T_IG_30Jan07.pdf	801-802
DTX-0275	NETGEAR-TRACK-PA-004270	NETGEAR-TRACK-PA-004321	NETGEAR Next 300 Mbps Wireless USB 2.0 Adapter WN121T User Manual - WN121T_UM_2Feb07.pdf	801-802
DTX-0276	NETGEAR-TRACK-PA-004322	NETGEAR-TRACK-PA-004323	NETGEAR RangeMax NEXT Wireless PCI Adapter WN311T data sheet - WN311T_DS_12July06.pdf	801-802
DTX-0277	NETGEAR-TRACK-PA-004324	NETGEAR-TRACK-PA-004325	NETGEAR RangeMax NEXT Wireless PCI Adapter WN311T installation guide - wn311t_install_guide_8may06.pdf	801-802
DTX-0278	NETGEAR-TRACK-PA-004326	NETGEAR-TRACK-PA-004381	NETGEAR RangeMax NEXT Wireless PCI Adapter WN311T User Manual - wn311t_user_manual_30jan07.pdf	801-802
DTX-0279	NETGEAR-TRACK-PA-004382	NETGEAR-TRACK-PA-004383	NETGEAR RangeMax NEXT Wireless Notebook Adapter WN511B data sheet - WN511B_DS_17May06.pdf	801-802
DTX-0280	NETGEAR-TRACK-PA-004384	NETGEAR-TRACK-PA-004385	NETGEAR RangeMax NEXT Wireless Notebook Adapter WN511B installation guide - WN511B_IG_11Apr06.pdf	801-802
DTX-0281	NETGEAR-TRACK-PA-004386	NETGEAR-TRACK-PA-004427	NETGEAR RangeMax NEXT Wireless Notebook Adapter WN511B User Manual - WN511B_UM_11Apr06.pdf	801-802

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DTX-0282	NETGEAR-TRACK-PA-004428	NETGEAR-TRACK-PA-004429	NETGEAR RangeMax Dual Band Wireless-N USB Adapter WNDA3100 data sheet - enus_ds_wnda3100_04dec07.pdf	801-802
DTX-0283	NETGEAR-TRACK-PA-004430	NETGEAR-TRACK-PA-004431	NETGEAR RangeMax Dual Band Wireless-N USB Adapter WNDA3100 installation guide - WNDA3100_IG_12dec07.pdf	801-802
DTX-0284	NETGEAR-TRACK-PA-004432	NETGEAR-TRACK-PA-004489	NETGEAR RangeMax Dual Band Wireless-N USB Adapter WNDA3100 User Manual - WNDA3100_UM_21Dec07.pdf	801-802
DTX-0285	NETGEAR-TRACK-PA-004490	NETGEAR-TRACK-PA-004491	NETGEAR 3DHD Home Theater Adapter & 3DHD Wireless Home Theater Networking Kit intallation guide - WNHD3004_IG_20AUG2010.pdf	801-802
DTX-0286	NETGEAR-TRACK-PA-004492	NETGEAR-TRACK-PA-004555	NETGEAR 3DHD Home Theater Adapter WNHD3004 User Manual - WNHD3004_UM_Retail_22NOV2010.pdf	801-802
DTX-0287	NETGEAR-TRACK-PA-004556	NETGEAR-TRACK-PA-004558	NETGEAR 3DHD Wireless Home Theater Networking Kit WNHDB3004 data sheet - WNHDB3004_DS_26Aug10.pdf	801-802
DTX-0288	NETGEAR-TRACK-PA-004559	NETGEAR-TRACK-PA-004560	NETGEAR RangeMax Dual Band Wireless-N Router WNDR3300 data sheet - enus_ds_wndr3300_16jan08.pdf	801-802
DTX-0289	NETGEAR-TRACK-PA-004561	NETGEAR-TRACK-PA-004600	NETGEAR Wireless Router Setup Manual - WNDR3300_SM_12Nov07.pdf	801-802

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DTX	BegBates	EndBates	Description	TT Objections
DTX-0290	NETGEAR-TRACK-PA-004601	NETGEAR-TRACK-PA-004602	NETGEAR N150 and N300 Wireless Routers Quick Start - Generic_N150_N300_Wireless_Router_QSG_ Color_08Aug2014.pdf	602, 801-802, 901
DTX-0291	NETGEAR-TRACK-PA-004603	NETGEAR-TRACK-PA-004604	NETGEAR RangeMax 150 Wireless Router WNR1000 data sheet - wnr1000_ds_29jan09.pdf	801-802
DTX-0292	NETGEAR-TRACK-PA-004605	NETGEAR-TRACK-PA-004652	NETGEAR N150 Wireless Router WNR1000 Setup Manual - WNR1000_SM_WW_23Jan09.pdf	801-802
DTX-0293	NETGEAR-TRACK-PA-004653	NETGEAR-TRACK-PA-004774	NETGEAR N150 Wireless Router WNR1000 User Manual - WNR1000_UM_WW_26Jan09.pdf	801-802
DTX-0294	NETGEAR-TRACK-PA-004775	NETGEAR-TRACK-PA-004831	NETGEAR genie Mobile App User Manual - genie_app_UM.pdf	801-802
DTX-0295	NETGEAR-TRACK-PA-004832	NETGEAR-TRACK-PA-004876	NETGEAR N150 Wireless Router Setup Manual - WNR1000v2h2_SM_30JULY2010.pdf	801-802
DTX-0296	NETGEAR-TRACK-PA-004877	NETGEAR-TRACK-PA-004920	NETGEAR Wireless-N 150 Router Setup Manual - WNR1000v2_SM_24SEP2009.pdf	801-802
DTX-0297	NETGEAR-TRACK-PA-004921	NETGEAR-TRACK-PA-005042	NETGEAR Wireless-N 150 Routher WNR1000v2 User Manual - WNR1000v2_UM_19NOV2009.pdf	801-802
DTX-0298	NETGEAR-TRACK-PA-005043	NETGEAR-TRACK-PA-005044	NETGEAR RangeMax 150 Wireless Router WNR1000 - wnr1000_ds_29jan09.pdf	602, 801-802, 903

DTX	BegBates	EndBates	Description	TT Objections
DTX-0299	NETGEAR-TRACK-PA-005045	NETGEAR-TRACK-PA-005046	NETGEAR N150 and N300 Wireless Routers Quick Start - Generic_N150_N300_Wireless_Router_QSG_ Color_08Aug2014.pdf	602, 801-802, 901
DTX-0300	NETGEAR-TRACK-PA-005047	NETGEAR-TRACK-PA-005103	NETGEAR genie Mobile App User Manual, March 2017 - genie_app_UM (1).pdf	801-802
DTX-0301	NETGEAR-TRACK-PA-005104	NETGEAR-TRACK-PA-005215	NETGEAR N150 Wireless Router WNR1000v3h2 User Manual - WNR1000v3h2_UM_21OCT2010.pdf	801-802
DTX-0302	NETGEAR-TRACK-PA-005216	NETGEAR-TRACK-PA-005256	NETGEAR N150 Wireless Router WNR1000v3 Setup Manual - WNR1000v3_SM_24SEPT2010.pdf	801-802
DTX-0303	NETGEAR-TRACK-PA-005257	NETGEAR-TRACK-PA-005258	NETGEAR RangeMax 150 Wireless Router WNR1000 data sheet - wnr1000_ds_29jan09.pdf	801-802
DTX-0304	NETGEAR-TRACK-PA-005259	NETGEAR-TRACK-PA-005260	NETGEAR RangeMax Wireless-N Gigabit Router WNR3500 data sheet - enus_ds_wnr3500_12nov_07.pdf	801-802
DTX-0305	NETGEAR-TRACK-PA-005261	NETGEAR-TRACK-PA-005308	NETGEAR Wireless Router Setup Manual, November 2007 - WNR3500_SM_26Nov07.pdf	801-802
DTX-0306	NETGEAR-TRACK-PA-005309	NETGEAR-TRACK-PA-005444	NETGEAR RangeMax Wireless-N Gigabit Router WNR3500 User Manual, March 2008 - WNR3500_UM_11Mar08.pdf	801-802
DTX-0307	NETGEAR-TRACK-PA-005445	NETGEAR-TRACK-PA-005446	NETGEAR RangeMax Wireless-N Gigabit Router WNR3500v2 data sheet - wnr3500v2_ds_07jul09.pdf	801-802

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DTX-0308	NETGEAR-TRACK-PA-005447	NETGEAR-TRACK-PA-005498	NETGEAR Wireless Router Setup Manual, February 2009 - WNR3500v2_SM_19Feb09.pdf	801-802
DTX-0309	NETGEAR-TRACK-PA-005499	NETGEAR-TRACK-PA-005622	NETGEAR RangeMax Wireless-N Gigabit Router WNR3500v2 User Manual, May 2009 - WNR3500v2_UM_07MAY09.pdf	801-802
DTX-0310	NETGEAR-TRACK-PA-005623	NETGEAR-TRACK-PA-005668	NETGEAR Wireless Router Setup Manual, April 2007 - WNR834Bv2_SM_16May07.pdf	801-802
DTX-0311	NETGEAR-TRACK-PA-005669	NETGEAR-TRACK-PA-005796	NETGEAR RangeMax NEXT Wireless Router WNR834B User Manual, July 2007 - WNR834Bv2_UM_03Jul07.pdf	801-802
DTX-0312	NETGEAR-TRACK-PA-005797	NETGEAR-TRACK-PA-005798	NETGEAR RangeMax NEXT Wirless-N Router WNR834B data sheet - WNR834B_DS_31May07.pdf	801-802
DTX-0313	NETGEAR-TRACK-PA-005799	NETGEAR-TRACK-PA-005800	NETGEAR RangeMax NEXT Wireless Router WNR834B data sheet - WNR834B_DS_21Apr06.pdf	801-802
DTX-0314	NETGEAR-TRACK-PA-005801	NETGEAR-TRACK-PA-005892	NETGEAR RangeMax NEXT Wireless Router WNR834B Reference Manual, May 2006 - WNR834B_RM_18May06.pdf	801-802
DTX-0315	NETGEAR-TRACK-PA-005893	NETGEAR-TRACK-PA-005984	NETGEAR RangeMax NEXT Wireless Router WNR834M Reference Manual, May 2006 - wnr834m_ref_manual.pdf	801-802
DTX-0316	NETGEAR-TRACK-PA-005985	NETGEAR-TRACK-PA-005986	NETGEAR RangeMax NEXT Wireless Router - Gigabit Edition WNR854T data sheet - WNR854T_DS_18Apr06.pdf	801-802
DTX-0317	NETGEAR-TRACK-PA-005987	NETGEAR-TRACK-PA-005988	NETGEAR RangeMax NEXT Wireless Router WNR854T installation guide - wnr854t_install_24mar06.pdf	801-802

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DTX-0318	NETGEAR-TRACK-PA-005989	NETGEAR-TRACK-PA-006078	NETGEAR RangeMax NEXT Wireless Router Model WNR854T Reference Manual, April 2006 - WNR854T_RM_20Apr06.pdf	801-802
DTX-0319	NETGEAR-TRACK-PA-006079	NETGEAR-TRACK-PA-006106	NETGEAR Wireless Router Setup Manual, Apri 2006 - wnr854t_setup_manual.pdf	801-802
DTX-0320	NETGEAR-TRACK-PA-006107	NETGEAR-TRACK-PA-006108	NETGEAR RangeMax Wireless USB 2.0 Adapter WPN111 data sheet - WPN111_ds_02Feb05.pdf	801-802
DTX-0321	NETGEAR-TRACK-PA-006109	NETGEAR-TRACK-PA-006110	NETGEAR RangeMax Wireless USB 2.0 Adapter WPN111 installation guide - WPN111_IG_29Jan07.pdf	801-802
DTX-0322	NETGEAR-TRACK-PA-006111	NETGEAR-TRACK-PA-006166	NETGEAR RangeMax Wireless USB 2.0 Adapter WPN111 User Manual, February 2007 - WPN111_UM_15Feb07.pdf	801-802
DTX-0323	NETGEAR-TRACK-PA-006167	NETGEAR-TRACK-PA-006168	NETGEAR RangeMax Wireless PCI Adapter WPN311 data sheet - WPN311_ds_02Feb05.pdf	801-802
DTX-0324	NETGEAR-TRACK-PA-006169	NETGEAR-TRACK-PA-006170	NETGEAR RangeMax Wireless PCI Adapter WPN311 installation guide - WPN311_IG_17Jan07.pdf	801-802
DTX-0325	NETGEAR-TRACK-PA-006171	NETGEAR-TRACK-PA-006226	NETGEAR RangeMax Wireless PCI Adapter WPN311 User Manual, January 2007 - WPN311_UM_04Feb07.pdf	801-802
DTX-0326	NETGEAR-TRACK-PA-006227	NETGEAR-TRACK-PA-006228	NETGEAR RangeMax Wireless PC Card WPN511 data sheet - WPN511_ds_20July05.pdf	801-802

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DTX-0327	NETGEAR-TRACK-PA-006229	NETGEAR-TRACK-PA-006230	NETGEAR RangeMax Wireless PC Card WPN511 installation guide - WPN511_IG_17Jan07.pdf	801-802
DTX-0328	NETGEAR-TRACK-PA-006231	NETGEAR-TRACK-PA-006286	NETGEAR RangeMax Wireless PC Card WPN511 User Manual, January 2007 - WPN511_UM_03Feb07.pdf	801-802
DTX-0329	NETGEAR-TRACK-PA-006287	NETGEAR-TRACK-PA-006288	NETGEAR RangeMax Wireless Access Point WPN802 data sheet - WPN802_ds_1June05.pdf	801-802
DTX-0330	NETGEAR-TRACK-PA-006289	NETGEAR-TRACK-PA-006290	NETGEAR RangeMax Wireless Access Point WPN802 installation guide - wpn802_install_guide.pdf	801-802
DTX-0331	NETGEAR-TRACK-PA-006291	NETGEAR-TRACK-PA-006378	Reference Manual for the NETGEAR RangeMax Wireless Access Point WPN802, May 2005 - wpn_802_ref_manual.pdf	801-802
DTX-0332	NETGEAR-TRACK-PA-006379	NETGEAR-TRACK-PA-006380	NETGEAR RangeMax Wireless Access Point WPN802 data sheet - Data Sheet.pdf	801-802
DTX-0333	NETGEAR-TRACK-PA-006381	NETGEAR-TRACK-PA-006468	Reference Manual for the NETGEAR RangeMax Wireless Access Point WPN802, May 2005 - Reference Manual.pdf	801-802
DTX-0334	NETGEAR-TRACK-PA-006469	NETGEAR-TRACK-PA-006470	NETGEAR RangeMax Wireless Access Point WPN802 installation guide - Setup Manual.pdf	801-802
DTX-0335	NETGEAR-TRACK-PA-006471	NETGEAR-TRACK-PA-006472	NETGEAR RangeMax WiFi Range Extender WPN824EXT data sheet - wpn824ext_ds_27mar08.pdf	801-802

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DTX-0336	NETGEAR-TRACK-PA-006473	NETGEAR-TRACK-PA-006516	NETGEAR RangeMax WiFi Range Extender Setup Manual, March 2008 - WPN824EXT_SM_25Mar08.pdf	801-802
DTX-0337	NETGEAR-TRACK-PA-006517	NETGEAR-TRACK-PA-006580	NETGEAR RangeMax WiFi Range Extender WPN824EXT User Manual, April 2008 - WPN824EXT_UG_21Apr08.pdf	801-802
DTX-0338	NETGEAR-TRACK-PA-006581	NETGEAR-TRACK-PA-006582	NETGEAR RangeMax Wireless-N 150 Router WPN824N installation guide - WPN824N_IGPM_combo_30NOV09.pdf	801-802
DTX-0339	NETGEAR-TRACK-PA-006583	NETGEAR-TRACK-PA-006617	NETGEAR RangeMax Wireless-N 150 Router Setup Manual, November 2009 - WPN824N_SM_25NOV2009.pdf	801-802
DTX-0340	NETGEAR-TRACK-PA-006618	NETGEAR-TRACK-PA-006619	NETGEAR RangeMax Wireless Router WPN824 data sheet - WPN824_ds_29April05.pdf	801-802
DTX-0341	NETGEAR-TRACK-PA-006620	NETGEAR-TRACK-PA-006793	Reference Manual for the NETGEAR RangeMax Router WPN824, March 2005 - wpn824_ref_manual.pdf	801-802
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DTX-0343	NETGEAR-TRACK-PA-006796	NETGEAR-TRACK-PA-006797	NETGEAR RangeMax Wireless Router WPN824 data sheet - enus_ds_wpn824_13mar07.pdf	801-802
DTX-0344	NETGEAR-TRACK-PA-006798	NETGEAR-TRACK-PA-006835	NETGEAR Wireless Router Setup Manual, August 2007 - WPN824v3_SM_22Aug07.pdf	801-802
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DTX-0346	NETGEAR-TRACK-PA-006838	NETGEAR-TRACK-PA-007011	Reference Manual for the NETGEAR RangeMax Wireless Router WPN824, March 2005 - wpn824_ref_manual.pdf	801-802
DTX-0347	NETGEAR-TRACK-PA-007012	NETGEAR-TRACK-PA-007013	NETGEAR Wireless Home Router Setup Guide - wpn824_setup_guide.pdf	801-802
DTX-0348	NETGEAR-TRACK-PA-007014	NETGEAR-TRACK-PA-007015	NETGEAR RangeMax 240 Wireless USB 2.0 Adapter WPNT121 data sheet - WPNT121_DS_2Mar06.pdf	801-802
DTX-0349	NETGEAR-TRACK-PA-007016	NETGEAR-TRACK-PA-007017	NETGEAR Wireless USB 2.0 Adapter Model WPNT121 installation guide - WPNT121_IG_3Mar06.pdf	801-802
DTX-0350	NETGEAR-TRACK-PA-007018	NETGEAR-TRACK-PA-007065	NETGEAR RangeMax 240 Wireless USB 2.0 Adapter WPNT121 User Manual, March 2006 - wpnt121_user_manual_23mar06.pdf	801-802
DTX-0351	NETGEAR-TRACK-PA-007066	NETGEAR-TRACK-PA-007121	User Manual for the NETGEAR RangeMax 240 Wireless Notebook Adapter WPNT511, October 2005 - wpnt511_manual_28Oct05.pdf	801-802
DTX-0352	NETGEAR-TRACK-PA-007122	NETGEAR-TRACK-PA-007123	NETGEAR RangeMax 240 Wireless Notebook Adapter WPNT511 data sheet - WPNT511_RangeMax240_DS_10Nov05.pdf	801-802
DTX-0353	NETGEAR-TRACK-PA-007124	NETGEAR-TRACK-PA-007125	NETGEAR RangeMax 240 Wireless Router WPNT834 data sheet - WPNT834_RangeMax240_DS_10Nov05.pdf	801-802

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DTX-0354	NETGEAR-TRACK-PA-007126	NETGEAR-TRACK-PA-007232	Reference Manual for the NETGEAR RangeMax 240 Wireless Router WPNT834, November 2005 - WPNT834_RM_14Dec05.pdf	801-802
DTX-0355	NETGEAR-TRACK-PA-007233	NETGEAR-TRACK-PA-007244	U.S. Patent Application Publication US 2002/0197998 A1 - Schmidt	401-403, 602
DTX-0356	NETGEAR-TRACK-PA-007245	NETGEAR-TRACK-PA-007260	U.S. Patent Application Publication US 2003/0018735 A1 - Fujii	401-403, 602
DTX-0357	NETGEAR-TRACK-PA-007261	NETGEAR-TRACK-PA-007272	U.S. Patent Application Publication US 2003/0223377 A1 - Simmons	401-403, 602
DTX-0358	NETGEAR-TRACK-PA-007273	NETGEAR-TRACK-PA-007347	U.S. Patent Application Publication US 2004/0236547 A1 - Rappaport I	401-403, 602
DTX-0359	NETGEAR-TRACK-PA-007348	NETGEAR-TRACK-PA-007376	U.S. Patent Application Publication US 2004/0246936 A1 - Perlman	401-403, 602
DTX-0360	NETGEAR-TRACK-PA-007377	NETGEAR-TRACK-PA-007397	U.S. Patent Application Publication US 2005/0042999 A1 - Rappaport II	401-403, 602
DTX-0361	NETGEAR-TRACK-PA-007398	NETGEAR-TRACK-PA-007429	U.S. Patent Application Publication US 2005/0232179 A1 - da Costa	401-403, 602
DTX-0362	NETGEAR-TRACK-PA-007430	NETGEAR-TRACK-PA-007440	U.S. Patent Application Publication US 2006/0046644 A1 - Chung II	401-403, 602
DTX-0363	NETGEAR-TRACK-PA-007441	NETGEAR-TRACK-PA-007471	U.S. Patent Application Publication US 2006/0056370 A1 - Hancock	401-403, 602
DTX-0364	NETGEAR-TRACK-PA-007472	NETGEAR-TRACK-PA-007492	U.S. Patent Application Publication US 2006/0154691 A1 - Tang	401-403, 602
DTX-0365	NETGEAR-TRACK-PA-007493	NETGEAR-TRACK-PA-007510	U.S. Patent Application Publication US 2006/0166618 A1 - Bakaimis	401-403, 602

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DTX-0366	NETGEAR-TRACK-PA-007511	NETGEAR-TRACK-PA-007546	U.S. Patent Application Publication US 2006/0205341 A1 - Runyon	401-403, 602
DTX-0367	NETGEAR-TRACK-PA-007547	NETGEAR-TRACK-PA-007564	U.S. Patent Application Publication US 2007/0160020 A1 - Osann	401-403, 602
DTX-0368	NETGEAR-TRACK-PA-007565	NETGEAR-TRACK-PA-007574	U.S. Patent Application Publication US 2008/0039016 A1 - Bonta	401-403, 602
DTX-0369	NETGEAR-TRACK-PA-007575	NETGEAR-TRACK-PA-007594	U.S. Patent Application Publication US 2008/0101260 A1 - Maruyama	401-403, 602
DTX-0370	NETGEAR-TRACK-PA-007595	NETGEAR-TRACK-PA-007629	U.S. Patent Application Publication US 2008/0108317 A1 - Hsieh	401-403, 602
DTX-0371	NETGEAR-TRACK-PA-007630	NETGEAR-TRACK-PA-007673	U.S. Patent Application Publication US 2008/0151801 A1 - Mizuta	401-403, 602
DTX-0372	NETGEAR-TRACK-PA-007674	NETGEAR-TRACK-PA-007698	U.S. Patent Application Publication US 2008/0288686 A1 - Hikabe	401-403, 602
DTX-0373	NETGEAR-TRACK-PA-007699	NETGEAR-TRACK-PA-007708	U.S. Patent No. 5,875,179 - Tikalsky	401-403, 602
DTX-0374	NETGEAR-TRACK-PA-007709	NETGEAR-TRACK-PA-007748	U.S. Patent No. 6,049,593 - Acampora II	401-403, 602
DTX-0375	NETGEAR-TRACK-PA-007749	NETGEAR-TRACK-PA-007760	U.S. Patent No. 6,751,455 - Acampora I	
DTX-0376	NETGEAR-TRACK-PA-007761	NETGEAR-TRACK-PA-007770	U.S. Patent No. 6,907,226 - Kang	401-403, 602
DTX-0377	NETGEAR-TRACK-PA-007771	NETGEAR-TRACK-PA-007789	U.S. Patent No. 6,925,069 - Koos	401-403, 602
DTX-0378	NETGEAR-TRACK-PA-007790	NETGEAR-TRACK-PA-007821	U.S. Patent No. 6,980,080 - Christensen	401-403, 602
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DTX-0380	NETGEAR-TRACK-PA-007839	NETGEAR-TRACK-PA-007855	U.S. Patent No. 7,184,466 - Seemann	

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DTX-0381	NETGEAR-TRACK-PA-007856	NETGEAR-TRACK-PA-007869	U.S. Patent No. 7,376,087 - Srikrishna	401-403, 602
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DTX-0383	NETGEAR-TRACK-PA-007891	NETGEAR-TRACK-PA-007924	U.S. Patent No. 7,423,535 - Chung I	401-403, 602
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DTX-0387	NETGEAR-TRACK-PA-007989	NETGEAR-TRACK-PA-007992	BelAir50c Economical & Easy to Install Wireless_09_14_05.pdf	602, 801-802, 901
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DTX-0430	NETGEAR-TRACK-PA-008206	NETGEAR-TRACK-PA-008223	Cisco Aironet Wireless Access Points.pdf	401-403, 602,
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DTX-0431	NETGEAR-TRACK-PA-008224	NETGEAR-TRACK-PA-008224	Cisco Aironet Wireless Access Points2.pdf	401-403, 602,
				801-802, 901

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DTX-0432	NETGEAR-TRACK-PA-008225	NETGEAR-TRACK-PA-008250	Cisco Tech Talk_Radio Mgmt Effective WLAN	401-403, 602
			Deployment Operations & Security.pdf	801-802, 901
DTX-0433	NETGEAR-TRACK-PA-008251	NETGEAR-TRACK-PA-008251	Cisco Tech Talk_Radio Mgmt Effective WLAN	401-403, 602
			Deployment Operations & Security_2.pdf	801-802, 903
DTX-0434	NETGEAR-TRACK-PA-008252	NETGEAR-TRACK-PA-008253	Cisco Unified Wireless Network	401-403, 602
			(Introduction).pdf	801-802, 90
DTX-0435	NETGEAR-TRACK-PA-008254	NETGEAR-TRACK-PA-008259	Cisco Unified Wireless Network	401-403, 602
			(Overview).pdf	801-802, 90
DTX-0436	NETGEAR-TRACK-PA-008260	NETGEAR-TRACK-PA-008272	Cisco Unified Wireless Network	401-403, 602
			(Overview)2.pdf	801-802, 90
DTX-0437	NETGEAR-TRACK-PA-008273	NETGEAR-TRACK-PA-008273	Cisco Wireless Control System	401-403, 60
			(Introduction).pdf	801-802, 90
DTX-0438	NETGEAR-TRACK-PA-008274	NETGEAR-TRACK-PA-008276	Cisco Wireless LAN Solutions (At a Glance).pdf	401-403, 60
				801-802, 90
DTX-0439	NETGEAR-TRACK-PA-008277	NETGEAR-TRACK-PA-008277	Cisco Wireless LAN Solutions (At A	401-403, 60
			Glance)2.pdf	801-802, 90
DTX-0440	NETGEAR-TRACK-PA-008278	NETGEAR-TRACK-PA-008278	Cisco Wireless Location Appliance	401-403, 60
			(Bulletins).pdf	801-802, 90
DTX-0441	NETGEAR-TRACK-PA-008279	NETGEAR-TRACK-PA-008280	Cisco Wireless Location Appliance	602,
			(Understanding the LWAPP).pdf	801-802, 90
DTX-0442	NETGEAR-TRACK-PA-008281	NETGEAR-TRACK-PA-008284	Cisco Wireless Location Appliance (Using	602,
			Radio Resource Mgmt to Deliver WLAN).pdf	801-802, 90
DTX-0443	NETGEAR-TRACK-PA-008285	NETGEAR-TRACK-PA-008290	Cisco Wireless Location Applicance (Data	602
			Sheet).pdf	801-802, 90
DTX-0444	NETGEAR-TRACK-PA-008291	NETGEAR-TRACK-PA-008305	Cisco Wireless Location Applicance (Data	602
			Sheet)2.pdf	801-802, 90
DTX-0445	NETGEAR-TRACK-PA-008306	NETGEAR-TRACK-PA-008307	Cisco Wireless Location Applicance (Q&A).pdf	401-403, 60
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DTX-0446	NETGEAR-TRACK-PA-008308	NETGEAR-TRACK-PA-008311	Cisco Wireless Locaton Appliance	602,
			(Understanding the LWAPP)2.pdf	801-802, 90
DTX-0447	NETGEAR-TRACK-PA-008312	NETGEAR-TRACK-PA-008312	Cisco Wireless Mesh Network Solution.pdf	602,
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				801-802, 901
DTX-0449	NETGEAR-TRACK-PA-008314	NETGEAR-TRACK-PA-008314	Cisco Wireless Mesh Networking Solution	602,
			(Introduction).pdf	801-802, 901
DTX-0450	NETGEAR-TRACK-PA-008315	NETGEAR-TRACK-PA-008315	CiscoWorks Wireless LAN Solution Engine	602,
			(Introduction).pdf	801-802, 901
DTX-0451	NETGEAR-TRACK-PA-008316	NETGEAR-TRACK-PA-008413	CiscoWorks Wireless LAN Solution Engine 1.0	602,
			(Installation & Config Guide).pdf	801-802, 901
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			(User Guide).pdf	801-802, 901
DTX-0454	NETGEAR-TRACK-PA-008416	NETGEAR-TRACK-PA-008513	CiscoWorks Wireless LAN Solution Engine 1.1	602,
			(Installation & Config Guide).pdf	801-802, 901
DTX-0455	NETGEAR-TRACK-PA-008514	NETGEAR-TRACK-PA-008514	CiscoWorks Wireless LAN Solution Engine 1.1	602,
			(Installation & Config Guide)_2.pdf	801-802, 901
DTX-0456	NETGEAR-TRACK-PA-008515	NETGEAR-TRACK-PA-008515	CiscoWorks Wireless LAN Solution Engine 1.1	602, 801-802, 901
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			(Installation & Config Guide).pdf	801-802, 901
DTX-0461	NETGEAR-TRACK-PA-008703	NETGEAR-TRACK-PA-008703	CiscoWorks Wireless LAN Solution Engine 2.0	602,
			(User Guide).pdf	801-802, 901
DTX-0462	NETGEAR-TRACK-PA-008704	NETGEAR-TRACK-PA-008825	CiscoWorks Wireless LAN Solution Engine 2.5	602,
			(Installation & Config Guide).pdf	801-802, 903
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DTX-0464	NETGEAR-TRACK-PA-008827	NETGEAR-TRACK-PA-008827	CiscoWorks Wireless LAN Solution Engine 2.5	602,
			(User Guide).pdf	801-802, 90
DTX-0465	NETGEAR-TRACK-PA-008828	NETGEAR-TRACK-PA-008971	CiscoWorks Wireless LAN Solution Engine 2.7	602,
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DTX-0466	NETGEAR-TRACK-PA-008972	NETGEAR-TRACK-PA-008972	CiscoWorks Wireless LAN Solution Engine 2.7	602,
			(Installation & Config Guide)_2.pdf	801-802, 90
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			(User Guide).pdf	801-802, 90
DTX-0468	NETGEAR-TRACK-PA-008974	NETGEAR-TRACK-PA-008982	CiscoWorks Wireless LAN Solution Engine 2.9	602,
			(Data Sheet).pdf	801-802, 903
DTX-0469	NETGEAR-TRACK-PA-008983	NETGEAR-TRACK-PA-008983	CiscoWorks Wireless LAN Solution Engine 2.9	602,
			(User Guide).pdf	801-802, 903

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			Software 2.7 [CiscoWorks Wireless LAN	801-802, 901
			Solution Engine] - Cisco Systems.pdf	
DTX-0471	NETGEAR-TRACK-PA-008990	NETGEAR-TRACK-PA-009007	CiscoWorks Wireless LAN Solution Engines 2.9	602
			(Data Sheet)2.pdf	801-802, 901
DTX-0472	NETGEAR-TRACK-PA-009008	NETGEAR-TRACK-PA-009009	D-Link AirPremier DWL 8200AP Manual	602,
			Dualband Access Point.pdf	801-802, 901
DTX-0473	NETGEAR-TRACK-PA-009010	NETGEAR-TRACK-PA-009011	D-Link DI-634M Wireless 108G MIMO	602,
			Router.pdf	801-802, 901
DTX-0474	NETGEAR-TRACK-PA-009012	NETGEAR-TRACK-PA-009013	D-Link DWL-G650M Super G with MIMO	602,
			Wireless Notebook Adapter.pdf	801-802, 901
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			(Description).pdf	801-802, 901
DTX-0476	NETGEAR-TRACK-PA-009016	NETGEAR-TRACK-PA-009017	D-Link DWI-G800AP AirPlus Xtreme G	602,
			(Description)_2.pdf	801-802, 901
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			(Specifications).pdf	801-802, 901
DTX-0478	NETGEAR-TRACK-PA-009020	NETGEAR-TRACK-PA-009021	D-Link Super G with MIMO Wireless Notebook	602,
			Adapter.pdf	801-802, 901
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			Router.pdf	801-802, 901
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DTX-0487	NETGEAR-TRACK-PA-009035	NETGEAR-TRACK-PA-009035	Ember Product Guide (Features and	602,
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DTX-0489	NETGEAR-TRACK-PA-009037	NETGEAR-TRACK-PA-009038	EmberNet (Technical Brief).pdf	602,
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			and Speeds.pdf	801-802, 90
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			VPN Firewall 8 (Details).pdf	801-802, 901
DTX-0504	NETGEAR-TRACK-PA-009174	NETGEAR-TRACK-PA-009175	Netgear ME103 ProSafe 802.11b Wireless	602,
			Access Point (Details).pdf	801-802, 901
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			Software (Details).pdf	801-802, 901
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			Storage Router (Details).pdf	801-802, 901
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			Firewall Router (Details).pdf	801-802, 901
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DTX-0520	NETGEAR-TRACK-PA-009205	NETGEAR-TRACK-PA-009206	Netgear WPN311 RangeMax Wireless PCI	602,
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DTX-0553	NETGEAR-TRACK-PA-009520	NETGEAR-TRACK-PA-009520	Sonos_Quick_Start2.pdf	602,
				801-802, 901
DTX-0554	NETGEAR-TRACK-PA-009521	NETGEAR-TRACK-PA-009522	Sonos_ZonePlayer (Features).pdf	602,
				801-802, 901
DTX-0555	NETGEAR-TRACK-PA-009523	NETGEAR-TRACK-PA-009524	Sonos_ZonePlayer (Software).pdf	602,
				801-802, 901
DTX-0556	NETGEAR-TRACK-PA-009525	NETGEAR-TRACK-PA-009525	Sonos_ZonePlayer (Specifications).pdf	401-403, 602
				801-802, 901
DTX-0557	NETGEAR-TRACK-PA-009526	NETGEAR-TRACK-PA-009527	Super G with MIMO Wireless Router - DI-	602,
			624M by D-Link.pdf	801-802, 901
DTX-0558	Q1TRACKTHINGSNETGEAR981SC0000001	Q1TRACKTHINGSNETGEAR981SC0000355	QUALCOMM Source Code	
DTX-0559	QCTRACKTHINGSNETGEAR981_0000001	QCTRACKTHINGSNETGEAR981_0000004	Qualcomm RSSI Variation in IPQ807x and	
			WCN5024/QCN5054 Chipsets Application	
			Note (May 27, 2021)	
DTX-0560	QCTRACKTHINGSNETGEAR981_0000005	QCTRACKTHINGSNETGEAR981_0000014	Qualcomm	602,
			QCN6100/QCN6102/QCN6112/QCN6122/QCN	801-802, 901
			6132 Device Revision Guide (November 1,	
			2022)	
DTX-0561	QCTRACKTHINGSNETGEAR981_0000015	QCTRACKTHINGSNETGEAR981_0000060	Qualcomm QCN6102 5 GHz 2x2	602,
			802.11ax/ac/a/n WLAN AP data sheet	801-802, 901
DTX-0562	QCTRACKTHINGSNETGEAR981_0000061	QCTRACKTHINGSNETGEAR981_0000072	Qualcomm QCA9558.AP.SCP01.1	602,
			QCA9884.CUS239.5 Setup Guide (December	801-802, 901
			11, 2015)	
DTX-0563	QCTRACKTHINGSNETGEAR981_0000073	QCTRACKTHINGSNETGEAR981_0000084	Qualcomm QCA9558.AP.SCP01.1	602,
			QCA9884.CUS238.5 Setup Guide (March 3,	801-802, 901
			2016)	
DTX-0564	QCTRACKTHINGSNETGEAR981_0000085	QCTRACKTHINGSNETGEAR981_0000717	Qualcomm QCA9886 AP 10.4 Programmer's	602,
			Guide (January 28, 2016)	801-802, 901
DTX-0565	QCTRACKTHINGSNETGEAR981_0000718	QCTRACKTHINGSNETGEAR981_0000962	Qualcomm QCA9984 Proprietary Registers	602,
			Reference Manual (June 3, 2016)	801-802, 901
DTX-0566	QCTRACKTHINGSNETGEAR981_0000963	QCTRACKTHINGSNETGEAR981_0001244	Qualcomm QCA9984 MAC Registers	602,
			Reference Manual (April 1, 2016)	801-802, 901
DTX-0567	QCTRACKTHINGSNETGEAR981_0001245	QCTRACKTHINGSNETGEAR981_0001523	Qualcomm QCA9886 MAC Registers	602,
			Reference Manual (March 3, 2017)	801-802, 901
DTX-0568	QCTRACKTHINGSNETGEAR981_0001524	QCTRACKTHINGSNETGEAR981_0001573	· · · · · ·	602,
			802.11 ax/ac/a/b/g/n WLAN AP RFIC data	801-802, 901
			sheet	,

DTX **BegBates EndBates** Description **TT Objections** QCTRACKTHINGSNETGEAR981\_0001591 Qualcomm IPQ8065 AP161 and QCA9984 QCTRACKTHINGSNETGEAR981 0001574 DTX-0569 602, CUS239/CUS260 Setup Guide (February 9, 801-802, 901 2020) DTX-0570 QCTRACKTHINGSNETGEAR981 0001592 QCTRACKTHINGSNETGEAR981\_0001606 Qualcomm IPQ8065 AP161 and QCA9984 602. CUS238/CUS240 Setup Guide (February 10, 801-802, 901 2020) QCTRACKTHINGSNETGEAR981 0001607 QCTRACKTHINGSNETGEAR981\_0001622 | Qualcomm DTX-0571 602, IPQ8065.AP161.1.QCA9984.CS.CAS01.1.QCA9 801-802, 901 984.CS.CAS01.3.QCA9984.CUS260.5 Setup Guide (February 10, 2020) QCTRACKTHINGSNETGEAR981\_0001666 Qualcomm QCA9984 Dual-Band 4x4 with 4 SS QCTRACKTHINGSNETGEAR981 0001623 DTX-0572 801-802, 901 MIMO 802.11ac/abgn WLAN SoC Device Specification (September 17, 219) QCTRACKTHINGSNETGEAR981\_0001671 Qualcomm DTX-0573 QCTRACKTHINGSNETGEAR981\_0001667 801-802, 901 QCA9984/QCA9994/QCA9985/QCA9986/QCA 9987/QCA9988 Device Revision Specification (September 19, 2019) QCTRACKTHINGSNETGEAR981 0001672 QCTRACKTHINGSNETGEAR981\_0001694 | Qualcomm IPQ4019 AP.DK04.1 + QCA9984 DTX-0574 602, CUS238.5 Setup Guide (March 20, 2017) 801-802, 901 QCTRACKTHINGSNETGEAR981\_0001736 | Qualcomm QCA9886 Single-Band 2x2 with 2 DTX-0575 QCTRACKTHINGSNETGEAR981\_0001695 801-802, 901 SS MIMO 802.11 a/n/ac WLAN Soc Device Specification (December 20, 219) QCTRACKTHINGSNETGEAR981 0001741 DTX-0576 QCTRACKTHINGSNETGEAR981\_0001737 Qualcomm QCA9886/QCA9896 Device 602, Revision Guide (September 22, 2023) 801-802, 901 QCTRACKTHINGSNETGEAR981 0001772 DTX-0577 QCTRACKTHINGSNETGEAR981\_0001742 Qualcomm QCA9886.ILQ.1.0 ES Release Notes 602, 801-802 (October 12, 2015) QCTRACKTHINGSNETGEAR981\_0001812 Qualcomm QCA9886.ILQ.1.0 FC Release Notes QCTRACKTHINGSNETGEAR981\_0001773 DTX-0578 602, 801-802 (December 16, 2015) QCTRACKTHINGSNETGEAR981\_0001851 Qualcomm QCA9886JLQ.1.0 CS Release Notes QCTRACKTHINGSNETGEAR981 0001813 602, 801-802 DTX-0579 (January 29, 2016) QCTRACKTHINGSNETGEAR981\_0001888 Qualcomm QCA9886JLQ.1.0 CSU1 Release QCTRACKTHINGSNETGEAR981 0001852 DTX-0580 602, 801-802 Notes (April 1, 2016) QCTRACKTHINGSNETGEAR981\_0001921 | Qualcomm QCN5024 2.4 GHz WLAN RFIC QCTRACKTHINGSNETGEAR981 0001889 801-802, 901 DTX-0581 Device Specification (November 3, 2022) QCTRACKTHINGSNETGEAR981 0001955 Qualcomm QCN5054 5 GHz WLAN RFIC Device DTX-0582 QCTRACKTHINGSNETGEAR981 0001922 801-802, 901 Specification (November 4. 2022)

DTX	BegBates	EndBates	Description	TT Objections
DTX-0583	QCTRACKTHINGSNETGEAR981_0001956	QCTRACKTHINGSNETGEAR981_0001962	Qualcomm QC N5024/QC N5054/QC	602,
			N5124/QC N5154 Device Revision Guide	801-802, 901
			(November 11, 2022)	
DTX-0584	QCTRACKTHINGSNETGEAR981_0001963	QCTRACKTHINGSNETGEAR981_0001966	Qualcomm	801-802, 901
			QCN5021/QCN5022/QCN5052/QCN5121/QCN	
			5122/QCN5152 Device Revision Specification	
			(August 20, 2020)	
DTX-0585	QCTRACKTHINGSNETGEAR981_0001967	QCTRACKTHINGSNETGEAR981_0001989	Qualcomm QCN5052 5 GHz WLAN RFIC Data	602
			Sheet (December 2, 2020)	801-802, 903
DTX-0586	QCTRACKTHINGSNETGEAR981_0001990	QCTRACKTHINGSNETGEAR981_0002012	Qualcomm QCN5022 2.4 GHz WLAN RFIC Data	602
			Sheet (December 2, 2020)	801-802, 90
DTX-0587	QCTRACKTHINGSNETGEAR981_0002013	QCTRACKTHINGSNETGEAR981_0002089	Qualcomm IPQ5018 Wi-Fi Access Point SoC	602
			Data Sheet	801-802, 90
DTX-0588	QCTRACKTHINGSNETGEAR981_0002090	QCTRACKTHINGSNETGEAR981_0002117	Qualcomm IPQ5018 AP.MP03.x Setup User	602,
			Guide (February 21 , 2022)	801-802, 90
DTX-0589	QCTRACKTHINGSNETGEAR981_0002118	QCTRACKTHINGSNETGEAR981_0002139	Qualcomm IPQ5018 TB.MP04.3 Setup User	602,
			Guide (February 25, 2021)	801-802, 90
DTX-0590	QCTRACKTHINGSNETGEAR981_0002140	QCTRACKTHINGSNETGEAR981_0002161	Qualcomm IPQ8074.ILQ.11.5.1 ED1 Release	602, 801-80
			Notes (September 10, 2020)	
DTX-0591	QCTRACKTHINGSNETGEAR981_0002162	QCTRACKTHINGSNETGEAR981_0002196	Qualcomm IPQ8074.ILQ.11.5.1 ED2 Release	602, 801-80
			Notes (October 27, 2020)	
DTX-0592	QCTRACKTHINGSNETGEAR981_0002197	QCTRACKTHINGSNETGEAR981_0002234	Qualcomm IPQ8074.ILQ.11.5.1 ED3 Release	602, 801-80
			Notes (January 13, 2021)	
DTX-0593	QCTRACKTHINGSNETGEAR981_0002235	QCTRACKTHINGSNETGEAR981_0002278	Qualcomm IPQ8074.ILQ.11.4.1 CS Release	602, 801-80
			Notes (May 12, 2021)	
DTX-0594	QCTRACKTHINGSNETGEAR981_0002279	QCTRACKTHINGSNETGEAR981_0002326	Qualcomm IPQ8074.ILQ.11.4.1 CSU1 Release	602, 801-80
			Notes (August 25, 2021)	
DTX-0595	QCTRACKTHINGSNETGEAR981_0002327	QCTRACKTHINGSNETGEAR981_0002343	Qualcomm IPQ5018 SPI NAND AVL Software	602, 801-80
			Support User Guide (April 7, 2022)	
DTX-0596	QCTRACKTHINGSNETGEAR981_0002344	QCTRACKTHINGSNETGEAR981_0002374	Qualcomm IPQ5018.ILQ.11.3 ES Release Notes	602, 801-80
			(July 30, 2020)	
DTX-0597	QCTRACKTHINGSNETGEAR981_0002375	QCTRACKTHINGSNETGEAR981_0002394	Qualcomm IPQ8074.WFA.11.5 EasyMesh R4	602, 801-80
			and QoS Management R2 ED Release Notes	
			(August 11, 2021)	
DTX-0598	QCTRACKTHINGSNETGEAR981_0002395	QCTRACKTHINGSNETGEAR981_0002413	Qualcomm IPQ8074.WFA.11.5 EasyMesh R4	602, 801-80
			User Guide (November 18, 2021)	
DTX-0599	QCTRACKTHINGSNETGEAR981_0002414	QCTRACKTHINGSNETGEAR981_0002433	Qualcomm IPQ8074.WFA.11.5 EasyMesh R5	602, 801-80
			User Guide (August 5, 2022)	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0600	QCTRACKTHINGSNETGEAR981_0002434	QCTRACKTHINGSNETGEAR981_0002454	Qualcomm IPQ8074.WFA.11.5 EasyMesh R4	602, 801-802
			and QoS Management R2 ES Release Notes	
			(October 1 , 2021)	
DTX-0601	QCTRACKTHINGSNETGEAR981_0002455	QCTRACKTHINGSNETGEAR981_0002475	Qualcomm IPQ8074.WFA.11.5 EasyMesh R4	602, 801-802
			and QoS Management R2 ES2 Release Notes	
			(October 13, 2021)	
DTX-0602	QCTRACKTHINGSNETGEAR981_0002476	QCTRACKTHINGSNETGEAR981_0002496	Qualcomm IPQ8074.WFA.11.5 EasyMesh R4	602, 801-802
			and QoS Management R2 ES3 Release Notes	
			(October 20, 2021)	
DTX-0603	QCTRACKTHINGSNETGEAR981_0002497	QCTRACKTHINGSNETGEAR981_0002517	Qualcomm IPQ8074.WFA.11.5 EasyMesh R4	602, 801-802
			and QoS Management R2 CSU1 Release Notes	
			(January 27, 2022)	
DTX-0604	QCTRACKTHINGSNETGEAR981_0002518	QCTRACKTHINGSNETGEAR981_0002538	Qualcomm IPQ8074.WFA.11.5 EasyMesh R4	602, 801-802
			and QoS Management R2 CSU2 Release Notes	
			(April 1, 2022)	
DTX-0605	QCTRACKTHINGSNETGEAR981_0002539	QCTRACKTHINGSNETGEAR981_0002558	Qualcomm IPQ8074.WFA.11.5 EasyMesh R5	602, 801-802
			CSU3 Release Notes (August 5, 2022)	
DTX-0606	QCTRACKTHINGSNETGEAR981_0002559	QCTRACKTHINGSNETGEAR981_0002578	Qualcomm IPQ8074.WFA.11.5 EasyMesh R5	602, 801-80
			CSU4 Release Notes (October 13, 2022)	
DTX-0607	QCTRACKTHINGSNETGEAR981_0002579	QCTRACKTHINGSNETGEAR981_0002597	Qualcomm IPQ8074.WFA.11.4 ES Release	602, 801-802
			Notes (August 18, 2021)	
DTX-0608	QCTRACKTHINGSNETGEAR981_0002598	QCTRACKTHINGSNETGEAR981_0002617	Qualcomm IPQ8074.WFA.11.4 CS Release	602, 801-802
			Notes (September 29, 2021)	
DTX-0609	QCTRACKTHINGSNETGEAR981_0002618	QCTRACKTHINGSNETGEAR981_0002636	Qualcomm IPQ8074.WFA.11.4 CSU1 Release	602, 801-802
			Notes (October 21 , 2021)	
DTX-0610	QCTRACKTHINGSNETGEAR981_0002637	QCTRACKTHINGSNETGEAR981_0002655	Qualcomm IPQ8074.WFA.11.4 CSU2 Release	602, 801-802
			Notes (May 10, 2022)	
DTX-0611	QCTRACKTHINGSNETGEAR981_0002656	QCTRACKTHINGSNETGEAR981_0002693	Qualcomm IPQ5018.LC.11.6.0 ED Release	602, 801-802
			Notes (December 13, 2022)	
DTX-0612	QCTRACKTHINGSNETGEAR981_0002694	QCTRACKTHINGSNETGEAR981_0002732	Qualcomm IPQ5018.LC.11.6.0 CS Release	602, 801-802
			Notes (January 30, 2023)	
DTX-0613	QCTRACKTHINGSNETGEAR981_0002733	QCTRACKTHINGSNETGEAR981_0002772	Qualcomm IPQ5018.LC.11.6.0 CSU1 Release	602, 801-802
			Notes (May 17, 2023)	
DTX-0614	QCTRACKTHINGSNETGEAR981_0002773	QCTRACKTHINGSNETGEAR981_0002809	Qualcomm IPQ5018.LC.11.6.0 CSU2 Release	602, 801-802
			Notes (October 3, 2023)	
DTX-0615	QCTRACKTHINGSNETGEAR981_0002810	QCTRACKTHINGSNETGEAR981_0002838	Qualcomm IPQ5018 IPSec SFE Offload	602, 801-802
			Implementation User Guide (July 11, 2023)	

Guide (September 12, 2019)

2015)

IPQ4018/IPQ4028/IPQ4019/IPQ4029 MAC

Registers Reference Manual (November 19,

QCTRACKTHINGSNETGEAR981\_0003768 Qualcomm

DTX-0628

QCTRACKTHINGSNETGEAR981 0003492

801-802, 901

602,

801-802, 901

DTX	BegBates	EndBates	Description	TT Objections
DTX-0629	QCTRACKTHINGSNETGEAR981_0003769	QCTRACKTHINGSNETGEAR981_0003789	Qualcomm	602,
			IPQ4018/IPQ4028/IPQ4019/IPQ4029 TLMM	801-802, 901
			Registers Reference Manual (November 6,	
			2015)	
DTX-0630	QCTRACKTHINGSNETGEAR981_0003790	QCTRACKTHINGSNETGEAR981_0003811	Qualcomm	602,
			IPQ4018/IPQ4028/IPQ4019/IPQ4029 DDRC	801-802, 901
			Registers Reference Manual (November 6,	
			2015)	
DTX-0631	QCTRACKTHINGSNETGEAR981_0003812	QCTRACKTHINGSNETGEAR981_0004283	Qualcomm	602,
			IPQ4018/IPQ4028/IPQ4019/IPQ4029 Ethernet	801-802, 901
			Subsystem Registers Reference Manual	
			(November 17, 2015)	
DTX-0632	QCTRACKTHINGSNETGEAR981_0004284	QCTRACKTHINGSNETGEAR981_0004402	Qualcomm	602,
			IPQ4018/IPQ4019/IPQ4028/IPQ4029 GCC	801-802, 901
			Registers Reference Manual (February 22,	
			2016)	
DTX-0633	QCTRACKTHINGSNETGEAR981_0004403	QCTRACKTHINGSNETGEAR981_0004428	Qualcomm IPQ4019.ILQ.1.1.5 ES Release	602, 801-802
			Notes (March 21, 2016)	
DTX-0634	QCTRACKTHINGSNETGEAR981_0004429	QCTRACKTHINGSNETGEAR981_0004460	Qualcomm IPQ4019.ILQ.1.1.5 FC Release	602, 801-802
			Notes (May 6, 2016)	
DTX-0635	QCTRACKTHINGSNETGEAR981_0004461	QCTRACKTHINGSNETGEAR981_0004493	Qualcomm IPQ4019.ILQ.1.1.5 CS Release	602, 801-802
			Notes (June 27, 2016)	
DTX-0636	QCTRACKTHINGSNETGEAR981_0004494	QCTRACKTHINGSNETGEAR981_0004514	Qualcomm IPQ4019.ILQ.1.2.2 ED Release	602, 801-802
			Notes (October 6, 2016)	
DTX-0637	QCTRACKTHINGSNETGEAR981_0004515	QCTRACKTHINGSNETGEAR981_0004534	Qualcomm IPQ4019.ILQ.1.2.2 CS Release	602, 801-802
			Notes (November 29, 2016)	
DTX-0638	QCTRACKTHINGSNETGEAR981_0004535	QCTRACKTHINGSNETGEAR981_0004567	Qualcomm IPQ4019.ILQ.1.0 ES Release Notes	602, 801-802
			(July 14, 2015)	
DTX-0639	QCTRACKTHINGSNETGEAR981_0004568	QCTRACKTHINGSNETGEAR981_0004609	Qualcomm IPQ4019.ILQ.1.0 FC Release Notes	602, 801-802
			(October 6, 2015)	
DTX-0640	QCTRACKTHINGSNETGEAR981_0004610	QCTRACKTHINGSNETGEAR981_0004654	Qualcomm IPQ4019.ILQ.1.0 CS Release Notes	602, 801-802
			(November 30, 2015)	
DTX-0641	QCTRACKTHINGSNETGEAR981_0004655	QCTRACKTHINGSNETGEAR981_0004698	Qualcomm IPQ4019.ILQ.1.0 CSU1 Release	602, 801-802
			Notes (January 8, 2016)	
DTX-0642	QCTRACKTHINGSNETGEAR981_0004699	QCTRACKTHINGSNETGEAR981_0004774	Qualcomm	602,
			IPQ4018/IPQ4028/IPQ4019/IPQ4029 SOHO	801-802, 901
			Switch UCI Command User Guide (November	
			18, 2015)	

DTX	BegBates	EndBates	Description	TT Objection
DTX-0643	QCTRACKTHINGSNETGEAR981_0004775	QCTRACKTHINGSNETGEAR981_0004813	Qualcomm	602,
			IPQ4018/IPQ4028/IPQ4019/IPQ4029 Home	801-802, 903
			Switch Software Development Kit User Guide	
			(November 18, 2015)	
DTX-0644	QCTRACKTHINGSNETGEAR981_0004814	QCTRACKTHINGSNETGEAR981_0004973	Qualcomm	602,
			IPQ4018/IPQ4028/IPQ4019/IPQ4029 SOHO	801-802, 90
			Switch Software Development Kit Reference	
			Manual (November 18, 2015)	
DTX-0645	QCTRACKTHINGSNETGEAR981_0004974	QCTRACKTHINGSNETGEAR981_0005070	` ' '	602,
			IPQ4018/IPQ4028/IPQ4019/IPQ4029 Switch	801-802, 90
			Software Development Kit Diagnostic Shell	,
			User Guide (November 18, 2015)	
DTX-0646	QCTRACKTHINGSNETGEAR981_0005071	QCTRACKTHINGSNETGEAR981_0005091		602,
		_	Design Setup Guide (October 13, 2016)	801-802, 90
DTX-0647	QCTRACKTHINGSNETGEAR981_0005092	QCTRACKTHINGSNETGEAR981_0005116		602,
			Reference Design Setup Guide (March 10,	801-802, 90
			2017)	•
DTX-0648	QCTRACKTHINGSNETGEAR981_0005117	QCTRACKTHINGSNETGEAR981_0005201	Qualcomm IPQ8074 Wi-Fi Access Point Soc	801-802, 90
			Device Specification (July 28, 2021)	
DTX-0649	QCTRACKTHINGSNETGEAR981_0005202	QCTRACKTHINGSNETGEAR981_0005216	Qualcomm IPQ8074 AP.HK01 Setup Guide	602,
			(May 14, 2020)	801-802, 90
DTX-0650	QCTRACKTHINGSNETGEAR981_0005217	QCTRACKTHINGSNETGEAR981_0005294	Qualcomm IPQ6018 Wi-Fi Access Point Soc	602
			Data Sheet (July 29, 2021)	801-802, 90
DTX-0651	QCTRACKTHINGSNETGEAR981_0005295	QCTRACKTHINGSNETGEAR981_0005299	Qualcomm   PQ6000/I PQ6010/I PQ6018/I	602,
			PQ6028 Device Revision Guide (April 28, 2020)	801-802, 90
DTX-0652	QCTRACKTHINGSNETGEAR981_0005300	QCTRACKTHINGSNETGEAR981_0005300	Qualcomm IPQ6018 QFPROM Programming	602,
			Reference Guide (March 11, 2019)	801-802, 90
DTX-0653	QCTRACKTHINGSNETGEAR981_0005301	QCTRACKTHINGSNETGEAR981_0005320	Qualcomm IPQ6018 AP.CP01 Setup Guide	602,
			(March 12, 2020)	801-802, 90
DTX-0654	QCTRACKTHINGSNETGEAR981_0005321	QCTRACKTHINGSNETGEAR981_0005326	Qualcomm   PQ8072/  PQ807 4/1 PQ8076/	801-802, 90
			PQ8078 Device Revision Specification	
			(September 16, 2019)	
DTX-0655	QCTRACKTHINGSNETGEAR981_0005327	QCTRACKTHINGSNETGEAR981_0005352		602, 801-80
			Notes (August 26, 2019)	
DTX-0656	QCTRACKTHINGSNETGEAR981_0005353	QCTRACKTHINGSNETGEAR981_0005384		602, 801-80
			Notes (October 31, 2019)	

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DTX	BegBates	EndBates	Description	TT Objections
DTX-0657	QCTRACKTHINGSNETGEAR981_0005385	QCTRACKTHINGSNETGEAR981_0005407	Qualcomm IPQ6018.ATH.11.0.0 ED1 Release	602, 801-802
			Notes (January 22, 2020)	
DTX-0658	QCTRACKTHINGSNETGEAR981_0005408	QCTRACKTHINGSNETGEAR981_0005430	Qualcomm IPQ6018.ATH.11.0.0 ED2 Release	602, 801-802
			Notes (March 4, 2020)	
DTX-0659	QCTRACKTHINGSNETGEAR981_0005431	QCTRACKTHINGSNETGEAR981_0005456	Qualcomm IPQ6018.ATH.11.0.0 CS Release	602, 801-802
			Notes (April 8, 2020)	
DTX-0660	QCTRACKTHINGSNETGEAR981_0005457	QCTRACKTHINGSNETGEAR981_0005505	Qualcomm IPQ6018.ATH.11.3.0 ED2 Release	602, 801-802
			Notes (November 16, 2020)	
DTX-0661	QCTRACKTHINGSNETGEAR981_0005506	QCTRACKTHINGSNETGEAR981_0005560	Qualcomm IPQ6018.ATH.11.3.0 CS Release	602, 801-802
			Notes (February 24, 2021)	
DTX-0662	QCTRACKTHINGSNETGEAR981_0005561	QCTRACKTHINGSNETGEAR981_0005601	Qualcomm IPQ6018.ATH.11.3.0 ED1 Release	602, 801-802
			Notes (October 5, 2020)	
DTX-0663	QCTRACKTHINGSNETGEAR981_0005602	QCTRACKTHINGSNETGEAR981_0005635	Qualcomm IPQ5018.ATH.11.4.0 ED1 Release	602, 801-802
			Notes (October 28, 2020)	
DTX-0664	QCTRACKTHINGSNETGEAR981_0005636	QCTRACKTHINGSNETGEAR981_0005673	Qualcomm IPQ5018.ATH.11.4.0 ED2 Release	602, 801-802
			Notes (March 18, 2021)	
DTX-0665	QCTRACKTHINGSNETGEAR981_0005674	QCTRACKTHINGSNETGEAR981_0005708	Qualcomm IPQ5018.ATH.11.4.0 ED3 Release	602, 801-802
			Notes (March 18, 2021)	
DTX-0666	QCTRACKTHINGSNETGEAR981_0005709	QCTRACKTHINGSNETGEAR981_0005744	Qualcomm IPQ5018.ATH.11.4.0 ED4 Release	602, 801-802
			Notes (April 14, 2021)	
DTX-0667	QCTRACKTHINGSNETGEAR981_0005745	QCTRACKTHINGSNETGEAR981_0005805	Qualcomm IPQ5018.ATH.11.5.0 ED2 Release	602, 801-802
			Notes (June 30, 2021)	
DTX-0668	QCTRACKTHINGSNETGEAR981_0005806	QCTRACKTHINGSNETGEAR981_0005850	Qualcomm IPQ5018.ATH.11.5.0 QSDK ED1	602, 801-802
			Release Notes (August 30, 2021)	
DTX-0669	QCTRACKTHINGSNETGEAR981_0005851	QCTRACKTHINGSNETGEAR981_0005892	Qualcomm IPQ5018.ATH.11.5.0 QSDK ED2	602, 801-802
			Release Notes (September 15, 2021)	
DTX-0670	QCTRACKTHINGSNETGEAR981_0005893	QCTRACKTHINGSNETGEAR981_0005925	Qualcomm IPQ5018.ATH.11.5.0 QSDK ED3	602, 801-802
			Release Notes (October 13, 2021)	
DTX-0671	QCTRACKTHINGSNETGEAR981_0005926	QCTRACKTHINGSNETGEAR981_0005987	Qualcomm IPQ5018.LC.11.5.0 CSU1 Release	602, 801-802
			Notes (June 29, 2022)	
DTX-0672	QCTRACKTHINGSNETGEAR981_0005988	QCTRACKTHINGSNETGEAR981_0006036	Qualcomm IPQ5018.LC.11.5.0 ED3 Release	602, 801-802
			Notes (October 13, 2021)	
DTX-0673	QCTRACKTHINGSNETGEAR981_0006037	QCTRACKTHINGSNETGEAR981_0006085	Qualcomm IPQ5018.LC.11.5.0 ED4 Release	602, 801-802
			Notes (December 2, 2021)	
DTX-0674	QCTRACKTHINGSNETGEAR981_0006086	QCTRACKTHINGSNETGEAR981_0006144	Qualcomm IPQ5018.LC.11.5.0 EDS Release	602, 801-802
			Notes (December 23, 2021)	
DTX-0675	QCTRACKTHINGSNETGEAR981_0006145	QCTRACKTHINGSNETGEAR981_0006204	Qualcomm IPQ5018.LC.11.5.0 ED6 Release	602, 801-802
			Notes (January 28, 2022)	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0676	QCTRACKTHINGSNETGEAR981_0006205	QCTRACKTHINGSNETGEAR981_0006267	Qualcomm IPQ5018.LC.11.5.0 ED7 Release	602, 801-802
			Notes (March 16, 2022)	
DTX-0677	QCTRACKTHINGSNETGEAR981_0006268	QCTRACKTHINGSNETGEAR981_0006328	Qualcomm IPQ5018.LC.11.5.0 EDS Release	602, 801-802
			Notes (April 18, 2022)	
DTX-0678	QCTRACKTHINGSNETGEAR981_0006329	QCTRACKTHINGSNETGEAR981_0006389	Qualcomm IPQ5018.LC.11.5.0 CS Release	602, 801-802
			Notes (May 11, 2022)	
DTX-0679	QCTRACKTHINGSNETGEAR981_0006390	QCTRACKTHINGSNETGEAR981_0006417	Qualcomm IPQ6018.ATH.11.4.0 ED1 Release	602, 801-802
			Notes (October 28, 2020)	
DTX-0680	QCTRACKTHINGSNETGEAR981_0006418	QCTRACKTHINGSNETGEAR981_0006446	Qualcomm IPQ6018.ATH.11.4.0 ED2 Release	602, 801-802
			Notes (March 18, 2021)	
DTX-0681	QCTRACKTHINGSNETGEAR981_0006447	QCTRACKTHINGSNETGEAR981_0006475	Qualcomm IPQ6018.ATH.11.4.0 ED3 Release	602, 801-802
			Notes (March 18, 2021)	
DTX-0682	QCTRACKTHINGSNETGEAR981_0006476	QCTRACKTHINGSNETGEAR981_0006504	Qualcomm IPQ6018.ATH.11.4.0 ED4 Release	602, 801-802
			Notes (April 14, 2021)	
DTX-0683	QCTRACKTHINGSNETGEAR981_0006505	QCTRACKTHINGSNETGEAR981_0006589	Qualcomm IPQ8074A Wi-Fi Access Point Soc	801-802, 901
			Device Specification (July 28, 2021)	
DTX-0684	QCTRACKTHINGSNETGEAR981_0006590	QCTRACKTHINGSNETGEAR981_0006594	Qualcomm I PQ8072A/I PQ807 4A/I	801-802, 901
			PQ8076A/I PQ8078A Device Revision	
			Specification (July 1, 2019)	
DTX-0685	QCTRACKTHINGSNETGEAR981_0006595	QCTRACKTHINGSNETGEAR981_0006613	Qualcomm IPQ8074.WFA.11.3 EasyMesh R3	602,
			User Guide (December 7, 2020)	801-802, 901
DTX-0686	TT-N-000001	TT-N-0000898	File history of U.S. Patent No. 10,107,893	401-403, MIL
			(certified copy)	
DTX-0687	TT-N-0000899	TT-N-0001301	File history of U.S. Patent No. 9,642,017	401-403, MIL
			(certified copy)	
DTX-0688	TT-N-0001302	TT-N-0001416	File history of U.S. Patent No. 9,332,442	
			(certified copy)	
DTX-0689	TT-N-0001417	TT-N-0001431	U.S. Patent No. 9,332,442 (certified copy)	
DTX-0690	TT-N-0001432	TT-N-0001446	U.S. Patent No. 9,642,017 (certified copy)	401-403, MIL
DTX-0691	TT-N-0001447	TT-N-0001491	U.S. Patent No. 10,107,893 (certified copy)	401-403, MIL
DTX-0692	TT-N-0003312	TT-N-0003343	Complaint, TrackThings vs Amazon et al.,	401-403,
			WDTX-6-21-cv-00720-1, July 13, 2021	801-802, 901, N

DTX-0717

TT-N-0023263

TT-N-0023290

drawing-08-05-11.ppt

401-403, MIL

DTX	BegBates	EndBates	Description	TT Objections
DTX-0718	TT-N-0023291	TT-N-0023293	CleanClaims.doc	401-403, MIL
DTX-0719	TT-N-0023294	TT-N-0023329	MasterSlave01-08-05-11.doc	401-403, MIL
DTX-0720	TT-N-0023330	TT-N-0023362	wirelessRelay01-03-01-07.pdf	401-403, MIL
DTX-0721	TT-N-0023363	TT-N-0023395	wirelessRelay01-03-01-07-send.pdf	401-403, MIL
DTX-0722	TT-N-0023396	TT-N-0023403	drawing-03-01-07.pdf	401-403, MIL
DTX-0723	TT-N-0023404	TT-N-0023411	drawing-03-01-07.ppt	401-403, MIL
DTX-0724	TT-N-0023412	TT-N-0023427	spec-03-01-07.doc	401-403, MIL
DTX-0725	TT-N-0023428	TT-N-0023438	drawing-12-23-06.ppt	401-403, MIL
DTX-0726	TT-N-0023439	TT-N-0023446	drawing-02-22-07.ppt	401-403, MIL
DTX-0727	TT-N-0023447	TT-N-0023458	spec-12-24-06.doc	401-403, MIL
DTX-0728	TT-N-0023459	TT-N-0023466	drawing-02-25-07.ppt	401-403, MIL
DTX-0729	TT-N-0023467	TT-N-0023476	spec-1-5-06.doc	401-403, MIL
DTX-0730	TT-N-0023477	TT-N-0023483	spec-1-1-06.doc	401-403, MIL
DTX-0731	TT-N-0023484	TT-N-0023490	drawing-1-1-06.ppt	401-403, MIL
DTX-0732	TT-N-0023491	TT-N-0023498	017 Patent Figures 1 - 9	401-403, MIL
DTX-0733	TT-N-0023499	TT-N-0023502	claims12-31-05.doc	401-403, MIL
DTX-0734	TT-N-0023503	TT-N-0023506	claims1-1-06.doc	401-403, MIL
DTX-0735	TT-N-0023507	TT-N-0023510	Patent claims	401-403, MIL
DTX-0736	TT-N-0023511	TT-N-0023520	017/'442 Patent Specification	401-403, MIL
DTX-0737	TT-N-0023521	TT-N-0023530	spec-1-2-06.doc	401-403, MIL
DTX-0738	TT-N-0023531	TT-N-0023538	drawing-02-28-07.ppt	401-403, MIL
DTX-0739	TT-N-0023539	TT-N-0023550	spec-12-25-06.doc	401-403, MIL
DTX-0740	TT-N-0023551	TT-N-0023562	spec-02-27-07.doc	401-403, MIL
DTX-0741	TT-N-0023563	TT-N-0023573	spec-02-22-07.doc	401-403, MIL
DTX-0742	TT-N-0023574	TT-N-0023584	spec-02-25-07.doc	401-403, MIL
DTX-0743	TT-N-0023585	TT-N-0023597	spec-12-26-06.doc	401-403, MIL
DTX-0744	TT-N-0023598	TT-N-0023608	drawing-12-24-06.ppt	401-403, MIL
DTX-0745	TT-N-0023609	TT-N-0023618	spec-12-23-06.doc	401-403, MIL
DTX-0746	TT-N-0023619	TT-N-0023639	uspto-03-01-07-save.doc	401-403, MIL
DTX-0747	TT-N-0023640	TT-N-0023661	uspto-03-01-07.doc	401-403, MIL
DTX-0748	TT-N-0023662	TT-N-0023673	Patent specification	401-403, MIL
DTX-0749	TT-N-0023674	TT-N-0023681	Draw-WirelessRelay-11-29-13.ppt	401-403, MIL
DTX-0750	TT-N-0023682	TT-N-0023703	wirelessRelay01-11-29-13-cont.doc	401-403, MIL
DTX-0751	TT-N-0023704	TT-N-0023711	Draw-WirelessRelay-11-29-13.pptx	401-403, MIL

DTX	BegBates	EndBates	Description	TT Objections
DTX-0752	TT-N-0023712	TT-N-0023726	893 Patent Specification	401-403, MIL
DTX-0752	TT-N-0023727	TT-N-0023742	drawing-05-16-11.ppt	401-403, MIL
DTX-0754	TT-N-0023743	TT-N-0023756	drawing 05 10 11.ppt	401-403, MIL
DTX-0755	TT-N-0023757	TT-N-0023776	893 Patent Figures 1-16	401-403, MIL
DTX-0756	TT-N-0023777	TT-N-0023792	drawing-07-06-10.ppt	401-403, MIL
DTX-0757	TT-N-0023793	TT-N-0023800	drawing-03-01-07.ppt	401-403, MIL
DTX-0758	TT-N-0023801	TT-N-0023828	drawing-08-05-11.ppt	401-403, MIL
DTX-0759	TT-N-0023829	TT-N-0023856	drawing-08-05-11.ppt	401-403, MIL
DTX-0760	TT-N-0023857	TT-N-0023884	drawing-08-05-11.ppt	401-403, MIL
DTX-0761	TT-N-0023885	TT-N-0023922	Submit-MasterSlave01-10-9-18.doc	401-403, MIL
DTX-0762	TT-N-0023923	TT-N-0023930	Draw-WirelessRelay-4-30-17.pptx	401-403, MIL
DTX-0763	TT-N-0023931	TT-N-0023938	trackThingsPatentHighlights.pptx	401-403, MIL
DTX-0764	TT-N-0023939	TT-N-0023966	drawing-08-05-11.ppt	401-403, MIL
DTX-0765	TT-N-0023967	TT-N-0023994	drawing-08-05-11.ppt	401-403, MIL
DTX-0766	TT-N-0024341	TT-N-0024374	Netgear Orbi Review_ The Mesh Router to	401-403, 602,
			Beat _ Tom's Guide	801-802, 901
DTX-0767	TT-N-0025968	TT-N-0025968	Screen capture of document properties - TT-E- 0002540.pdf	401-403
DTX-0768	TT-N-0025969	TT-N-0025969	Screen capture of document properties - TT-E- 0001676.pdf	401-403
DTX-0769	TT-N-0025970	TT-N-0025970	Screen capture of document properties - TT-E- 0002368.pdf	401-403
DTX-0770	TT-N-0025971	TT-N-0025971	Screen capture of document properties - TT-E-0002595.pdf	401-403
DTX-0771	TT-N-0025972	TT-N-0025972	Screen capture of document properties - TT-E-0002405.pdf	401-403
DTX-0772	TT-N-0025973	TT-N-0025973	Screen capture of document properties - TT-E- 0002412.pdf	401-403
DTX-0773	TT-N-0025974	TT-N-0025974	Screen capture of document properties - TT-E- 0002460.pdf	401-403
DTX-0774	TT-N-0025975	TT-N-0025975	Screen capture of document properties - TT-E- 0002472.pdf	401-403
DTX-0775	TT-N-0025976	TT-N-0025976	Screen capture of document properties - TT-E- 0001824.pdf	401-403

0002060.pdf

DTX	BegBates	EndBates	Description	TT Objections
DTX-0795	TT-N-0025996	TT-N-0025996	Screen capture of document properties - TT-E-0002432.pdf	401-403
DTX-0796	TT-N-0025997	TT-N-0025997	Screen capture of document properties - TT-E-0002506.pdf	401-403
DTX-0797	TT-N-0025998	TT-N-0025998	Screen capture of document properties - TT-E-0002398.pdf	401-403
DTX-0798	TT-N-0025999	TT-N-0025999	Screen capture of document properties - TT-E-0002648.pdf	401-403
DTX-0799	TT-N-0026000	TT-N-0026000	Screen capture of document properties - TT-E- 0001496.pdf	401-403
DTX-0800	TT-N-0026001	TT-N-0026001	Screen capture of document properties - TT-E-0002583.pdf	401-403
DTX-0801	TT-N-0026002	TT-N-0026002	Screen capture of document properties - TT-E- 0002105.pdf	401-403
DTX-0802	TT-N-0026003	TT-N-0026003	Screen capture of document properties - TT-E-0002726.pdf	401-403
DTX-0803	TT-N-0026004	TT-N-0026004	Screen capture of document properties - TT-E- 0002215.pdf	401-403
DTX-0804	TT-N-0026005	TT-N-0026005	Screen capture of document properties - TT-E- 0001701.pdf	401-403
DTX-0805	TT-N-0026006	TT-N-0026006	Screen capture of document properties - TT-E-0002442.pdf	401-403
DTX-0806	TT-N-0026007	TT-N-0026007	Screen capture of document properties - TT-E- 0002325.pdf	401-403
DTX-0807	TT-N-0026008	TT-N-0026008	Screen capture of document properties - TT-E- 0002603.pdf	401-403
DTX-0808	TT-N-0026009	TT-N-0026009	Screen capture of document properties - TT-E- 0002625.pdf	401-403
DTX-0809	TT-N-0026010	TT-N-0026010	Screen capture of document properties - TT-E-0002424.pdf	401-403
DTX-0810	TT-N-0026011	TT-N-0026011	Screen capture of document properties - TT-E-0002633.pdf	401-403
DTX-0811	TT-N-0026012	TT-N-0026012	Screen capture of document properties - TT-E- 0001650.pdf	401-403
DTX-0812	TT-N-0026013	TT-N-0026013	Screen capture of document properties - TT-E-0001520.pdf	401-403
DTX-0813	TT-N-0026014	TT-N-0026014	Screen capture of document properties - TT-E- 0002519.pdf	401-403

DTX	BegBates	EndBates	Description	TT Objections
DTX-0814	TT-N-0026015	TT-N-0026015	Screen capture of document properties - TT-E-0002360.pdf	401-403
DTX-0815	TT-N-0026016	TT-N-0026016	Screen capture of document properties - TT-E-0002561.pdf	401-403
DTX-0816	TT-N-0026017	TT-N-0026017	Screen capture of document properties - TT-E-0002484.pdf	401-403
DTX-0817	TT-N-0026018	TT-N-0026018	Screen capture of document properties - TT-E- 0002698.pdf	401-403
DTX-0818	TT-N-0026019	TT-N-0026019	Screen capture of document properties - TT-E- 0002452.pdf	401-403
DTX-0819	TT-N-0026020	TT-N-0026020	Screen capture of document properties - TT-E- 0001718.pdf	401-403
DTX-0820	TT-N-0026021	TT-N-0026021	Screen capture of document properties - TT-E-0002066.pdf	401-403
DTX-0821	TT-N-0026022	TT-N-0026022	Screen capture of document properties - TT-E-0002678.pdf	401-403
DTX-0822	TT-N-0026023	TT-N-0026023	Screen capture of document properties - TT-E-0002388.pdf	401-403
DTX-0823	TT-N-0026024	TT-N-0026024	Screen capture of document properties - TT-E-0002032.pdf	401-403
DTX-0824	TT-N-0026025	TT-N-0026025	Screen capture of document properties - TT-E- 0002349.pdf	401-403
DTX-0825	TT-N-0026026	TT-N-0026026	Screen capture of document properties - TT-E- 0001642.pdf	401-403
DTX-0826	TT-N-0026027	TT-N-0026027	Screen capture of document properties - TT-E- 0002495.pdf	401-403
DTX-0827	TT-N-0026028	TT-N-0026028	Screen capture of document properties - TT-E-0002380.pdf	401-403
DTX-0828	TT-N-0026173	TT-N-0026173	Industry's First Wave 2 802.11ac Wi-Fi SoC for Routers, Gateways and Access Points	602, 801-802, 901
DTX-0829	TT-N-0073457	TT-N-0073466	TrackThings correspondence to Qualcomm Incorporated attaching Patent Portfolio Sales Agreement	401-403, 602
DTX-0830	TT-N-0073509	TT-N-0073509	Certificate of Formation for Trackthings Limited Liability Company	401-403, 602

DTX **BegBates EndBates** Description **TT Objections** DTX-0831 TT-N-0073546 TT-N-0073548 Assignment of Patent Rights from Gabara to 401-403, 602 TrackThings Assignment of Patent Rights from Gabara to DTX-0832 TT-N-0073549 TT-N-0073551 401-403, 602 TrackThings DTX-0833 TT-N-0073561 TT-N-0073562 Assignment of Patent Rights fron Gabara to 401-403, 602 TrackThings (11/681,158) DTX-0834 TT-N-0074134 TT-N-0074134 Screen capture of patent assignment 401-403, 602, information 801-802, 901 DTX-0835 401-403, 602, TT-N-0077002 TT-N-0077002 **AD-HOC Wireless Network** 801-802, 901 DTX-0836 401-403, 602 TT-N-0079772 TT-N-0079803 U.S. Application No. 2007/0054670 A1 DTX-0837 401-403, 602, TT-N-0079893 TT-N-0079921 U.S. Patent No. 6.971.063 801-802 DTX-0838 401-403, 602, NETGEAR Technical Specifications - RBKE962 -801-802, 901 TT-N-0089203 TT-N-0089204 Whole Home Quad-band Mesh WiFi 6E System - 960 Series Screen capture of document properties - TT-N-TT-N-0092418 401-403 DTX-0839 TT-N-0092418 0023967.pdf Screen capture of document properties - TT-N-DTX-0840 TT-N-0092419 TT-N-0092419 401-403 0023939.pdf TT-N-0092420 Screen capture of document properties - TT-N-401-403 DTX-0841 TT-N-0092420 0023931.pdf Screen capture of document properties - TT-N-DTX-0842 TT-N-0092421 TT-N-0092421 401-403 0023923.pdf Screen capture of document properties - TT-N-DTX-0843 TT-N-0092422 TT-N-0092422 401-403 0023885.pdf Screen capture of document properties - TT-N-TT-N-0092423 DTX-0844 TT-N-0092423 401-403 0023857.pdf Screen capture of document properties - TT-N-DTX-0845 TT-N-0092424 TT-N-0092424 401-403 0023829.pdf TT-N-0092425 Screen capture of document properties - TT-N-401-403 DTX-0846 TT-N-0092425 0023801.pdf TT-N-0092426 TT-N-0092426 Screen capture of document properties - TT-N-401-403 DTX-0847 0023793.pdf

DTX	BegBates	EndBates	Description	TT Objections
DTX-0848	TT-N-0092427	TT-N-0092427	Screen capture of document properties - TT-N-0023777.pdf	401-403
DTX-0849	TT-N-0092428	TT-N-0092428	Screen capture of document properties - TT-N- 401- 0023757.pdf	
DTX-0850	TT-N-0092429	TT-N-0092429	Screen capture of document properties - TT-N-0023743.pdf	401-403
DTX-0851	TT-N-0092430	TT-N-0092430	Screen capture of document properties - TT-N-0023727.pdf	401-403
DTX-0852	TT-N-0092431	TT-N-0092431	Screen capture of document properties - TT-N-0023712.pdf	401-403
DTX-0853	TT-N-0092432	TT-N-0092432	Screen capture of document properties - TT-N-0023704.pdf	401-403
DTX-0854	TT-N-0092433	TT-N-0092433	Screen capture of document properties - TT-N-0023682.pdf	401-403
DTX-0855	TT-N-0092434	TT-N-0092434	Screen capture of document properties - TT-N-0023674.pdf	401-403
DTX-0856	TT-N-0092435	TT-N-0092435	Screen capture of document properties - TT-N- 40 0023662.pdf	
DTX-0857	TT-N-0092436	TT-N-0092436	Screen capture of document properties - TT-N- 40 0023640.pdf	
DTX-0858	TT-N-0092437	TT-N-0092437	Screen capture of document properties - TT-N- 401 0023619.pdf	
DTX-0859	TT-N-0092438	TT-N-0092438	Screen capture of document properties - TT-N- 0023609.pdf	
DTX-0860	TT-N-0092439	TT-N-0092439	Screen capture of document properties - TT-N-0023598.pdf	401-403
DTX-0861	TT-N-0092440	TT-N-0092440	Screen capture of document properties - TT-N-0023585.pdf	401-403
DTX-0862	TT-N-0092441	TT-N-0092441	Screen capture of document properties - TT-N- 0023574.pdf 401-40	
DTX-0863	TT-N-0092442	TT-N-0092442	Screen capture of document properties - TT-N- 0023563.pdf	
DTX-0864	TT-N-0092443	TT-N-0092443	Screen capture of document properties - TT-N- 401-403 0023551.pdf	
DTX-0865	TT-N-0092444	TT-N-0092444	Screen capture of document properties - TT-N- 0023539.pdf 401-40	
DTX-0866	TT-N-0092445	TT-N-0092445	Screen capture of document properties - TT-N-0023531.pdf	401-403

DTX-0884

DTX-0885

TT-N-0092463

TT-N-0092464

Screen capture of document properties - TT-N-

Screen capture of document properties - TT-N-

0023263.pdf

0023227.pdf

TT-N-0092463

TT-N-0092464

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DTX	BegBates	EndBates	Description	TT Objections
DTX-0886	TT-N-0092465	TT-N-0092465	Screen capture of document properties - TT-N-0023196.pdf	401-403
DTX-0887	TT-N-0092466	TT-N-0092466	Screen capture of document properties - TT-N- 401-4 0023190.pdf	
DTX-0888	TT-N-0092467	TT-N-0092467	Screen capture of document properties - TT-N-0023184.pdf	401-403
DTX-0889	TT-N-0092468	TT-N-0092468	Screen capture of document properties - TT-N-0023145.pdf	401-403
DTX-0890	TT-N-0092469	TT-N-0092469	Screen capture of document properties - TT-N-0023139.pdf	401-403
DTX-0891	TT-N-0092470	TT-N-0092470	Screen capture of document properties - TT-N-0023111.pdf	401-403
DTX-0892	TT-N-0092471	TT-N-0092471	Screen capture of document properties - TT-N-0023106.pdf	401-403
DTX-0893	TT-N-0092472	TT-N-0092472	Screen capture of document properties - TT-N- 401 0023070.pdf	
DTX-0894	TT-N-0092473	TT-N-0092473	Screen capture of document properties - TT-N- 40 0022931.pdf	
DTX-0895	TT-N-0092474	TT-N-0092474	Screen capture of document properties - TT-N- 40 0022903.pdf	
DTX-0896	TT-N-0092475	TT-N-0092475	Screen capture of document properties - TT-N- 401-4 0022896.pdf	
DTX-0897	TT-N-0092476	TT-N-0092476	Screen capture of document properties - TT-N- 0022797.pdf	
DTX-0898	TT-N-0092477	TT-N-0092477	Screen capture of document properties - TT-N- 0022780.pdf 401-40.	
DTX-0899	TT-N-0092478	TT-N-0092478	Screen capture of document properties - TT-N- 401-403 0022755.pdf	
DTX-0900	TT-N-0092479	TT-N-0092479	Screen capture of document properties - TT-N- 401-403 0022737.pdf	
DTX-0901	TT-N-0093019	TT-N-0093020	Amped Wireless Helios-Ex Highpower AC2200 602 Wi-Fi Range Extender data sheet 801-802, 9	
DTX-0902	TT-N-0094887	TT-N-0094890	NETGEAR Data Sheet - EX5000, AC1200 Dual 602 Band WiFi Range Extender 801-802	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0903	TT-N-0100005	TT-N-0100049	Settlement Agreements as Comparables: New Comprehensive Analysis from the Federal Circuit (April 20, 2017)	
DTX-0904	TT-N-0100056	TT-N-0100098	Session #4: Developments Impacting Reasonable Royalty Damages, CPVA Virtual Summit 2023 (Jan. 18, 2023)	
DTX-0905	TT-N-0100182	TT-N-0100186	The Economics of Patent Law Applied to Pre- Litigation Assessments (Aug. 30, 2018) 801-802	
DTX-0906			Defendant NETGEAR, Inc.'s Notice of Deposition of Plaintiff Trackthings, LLC Pursuant to Fed. R. Civ. P. 30(b)(6) (October 26, 2023)	
DTX-0907			Defendant NETGEAR, Inc.'s Notice of 401-403, 80 Deposition of Thaddeus Gabara	
DTX-0908			TrackThings LLC Sale and Licensing of Patents 401-403, 6 page from archive.org	
DTX-0909			TrackThings' Responses and Objections to Interrogatories (Nos. 1-14), dated September 14, 2023  LIT	
DTX-0910			TrackThings' Supplemental Responses and Objections to Interrogatories (Nos. 1, 6, 10), dated October 31, 2023  LIT	
DTX-0911			TrackThings' Responses and Objections to Interrogatories (Nos. 15-25), dated November 13, 2023 LIT	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0912			TrackThings' Supplemental Responses and	401-403, 602,
			Objections to Interrogatories (Nos. 8-9, 11-12,	801-802, 901, 1002,
			15, 19, 21, 24-25), dated December 1, 2023	LIT
DTX-0913			TrackThings' Supplemental Responses and	401-403, 602,
			Objections to Interrogatories (Nos. 5, 14, 15,	801-802, 901, 1002,
			22, 24), dated December 22, 2023	LIT
DTX-0914			TrackThings' Supplemental Responses and	401-403, 602,
			Objections to Interrogatories (Nos. 11, 14, 21,	801-802, 901, 1002,
			24), dated January 12, 2024	LIT
DTX-0915			TrackThings' Responses and Objections to	401-403, 602,
			Requests for Admission (Nos. 1-30), dated	801-802, 901, 1002,
			November 13, 2023	LIT
DTX-0916			NETGEAR's Invalidity Contentions, dated	801-802
			October 12, 2023	
DTX-0917			NETGEAR's Responses and Objections to	401-403, 602,
			Interrogatories (Nos. 1-8), dated October 31,	801-802, 901, 1002,
			2022	LIT
DTX-0918			NETGEAR's Responses and Objections to	401-403, 602,
			Interrogatories (Nos. 9-14), dated June 12,	801-802, 901, 1002,
			2023	LIT
DTX-0919			NETGEAR's Responses and Objections to	401-403, 602,
			Interrogatories (Nos. 15-24), dated October 6,	801-802, 901, 1002,
			2023	LIT
DTX-0920			NETGEAR's Supplemental Responses and	401-403, 602,
			Objections to Interrogatories (Nos. 1-2), dated	
			November 1, 2023	LIT
			I	

DTX	BegBates	EndBates	Description	TT Objections
DTX-0934			NETGEAR's Supplemental Objections and	401-403, 602,
			Responses to TrackThing's Interrogatories	801-802, 901, 1002,
			Nos. 2, 5, 6, and 8, December 22, 2023	LIT
DTX-0935			TrackThings' Third Supplemental Responses	401-403, 602,
			and Objections to NETGEAR Interrogatory No.	801-802, 901, 1002,
			24, January 12, 2024	LIT
DTX-0936			Amazon's Opening Daubert Brief - Holzen,	401-403,
			TrackThings vs Amazon et al., April 23, 2024	801-802, 901, MIL
DTX-0937			Amazon's Opposition to Daubert - Macartney,	401-403,
			May 7, 2024	801-802, 901, MIL
DTX-0938			Amazon's Reply Daubert Brief - Holzen,	401-403,
			TrackThings vs Amazon et al., May 14, 2024	801-802, 901, MIL
DTX-0939			Amended Complaint, Hera Wireless SA and	401-403, 602,
			Sisvel v. Netgear, Inc. DDE-1-17-cv-00951,	801-802, 901
			September 5, 2017	
DTX-0940			Complaint, 2BCom, LLC v. Netgear, Inc. NDCA-	401-403, 602,
			3-21-cv-00333, January 13, 2021	801-802, 901
DTX-0941			Complaint, Be Labs, Inc. v. Netgear, Inc. DDE-1-	401-403, 602,
			18-cv-01026, July 11, 2018	801-802, 901
DTX-0942			Complaint, Frequency Systems, LLC v. Netgear,	401-403, 602,
			Inc. EDTX-2-15-cv-00699, May 8, 2015	801-802, 901
DTX-0943			Complaint, Magnacross LLC v. NETGEAR, Inc.	401-403, 602,
			EDTX-2-17-cv-00297, April 12, 2017	801-802, 901
DTX-0944			Complaint, Mentone Solutions LLC. v. Netgear,	
			Inc. DDE-1-18-cv-01714, October 31, 2018	801-802, 901

DTX	BegBates	EndBates	Description	TT Objections
DTX-0945			Complaint, Modern Telecom Systems, LLC v.	401-403, 602,
			Netgear, Inc. DDE-1-18-cv-01159, August 3, 2018	801-802, 901
DTX-0946			Complaint, Orostream LLC v. NETGEAR Inc.	401-403, 602,
			DDE-1-18-cv-00325, February 27, 2018	801-802, 901
DTX-0947			Complaint, Verifire Network Solutions, LLC v.	401-403, 602,
			Netgear, Inc. EDTX-2-15-cv-00940, June 3, 2015	801-802, 901
DTX-0948			Complaint, Wetro Lan LLC v. Netgear, Inc.	401-403, 602,
			EDTX-2-15-cv-00102, January 30, 2015	801-802, 901
DTX-0949			Complaint, Wireless Transport LLC v Netgear,	401-403, 602,
			Inc. DDE-1-19-cv-01409, July 29, 2019	801-802, 901
DTX-0950			First Amended Complaint, Aegis 11 SA v.	401-403, 602,
			Netgear, Inc. DDE-1-19-cv-01162, October 20, 2020	801-802, 901
DTX-0951			TrackThings' Opening Daubert Brief -	401-403,
			Macartney, April 23, 2024	801-802, 901, MIL
DTX-0952			TrackThings Opposition to Daubert - Holzen,	401-403,
			TrackThings vs Amazon et al., May 7, 2024	801-802, 901, MIL
DTX-0953			TrackThings' Reply Daubert Brief - Macartney,	401-403,
			May 14, 2024	801-802, 901, MIL
DTX-0954			De Leon, N., "Should You Buy a WiFi Range	602,
			Extender?", Consumer Reports, May 2023	801-802, 901
DTX-0955			Held, R. F., Zhang, M., Lu, J., "LES High Tech	602,
			Sector Royalty Rates & Deal Terms Survey Report," 2021	801-802, 901

DTX	BegBates	EndBates Description		TT Objections
DTX-0964			NETGEAR's Supplemental Responses and	401-403, 602,
			Objections to Interrogatories (Nos. 2, 5, 6, 8),	801-802, 901, 1002
			dated December 22, 2023	LIT
DTX-0965			U.S. Patent No. 10,292,159	401-403, 602, 801-802
DTX-0966			Expert Report of Douglas Kidder Regard Damages Exhibit DGK-1: Douglas G. Kidder resume	
DTX-0967			Expert Report of Douglas Kidder Regard 401-4 Damages Exhibit DGK-2: Documents 801-80 Considered	
DTX-0968			Expert Report of Douglas Kidder Regard 401 Damages Exhibit DGK-3: NETGEAR License 801-8 Summary	
DTX-0969			Expert Report of Douglas Kidder Regard Damages Exhibit DGK-4: Chipset Prices as a Percentage of Hardware Revenue for Top Ten Selling Products & Holzen Benchmark Products	401-403, 602, 801-802, 901, LIT
DTX-0970			Expert Report of Douglas Kidder Regard 401-403, Damages Exhibit DGK-5: Damages based on Chipset SSPPU COGs	
DTX-0971			Expert Report of Douglas Kidder Regard 401-403, 6 Damages Exhibit DGK-6: RBS10 Third-Party 801-802, 90: Adjustment	
DTX-0972			Expert Report of Douglas Kidder Regard 401-403, 602 Damages Exhibit DGK-7: Average Selling 801-802, 901, Prices	
DTX-0973		Expert Report of Douglas Kidder Regard Damages Exhibit DGK-8: Holzen Survey Analyses		

DTX	BegBates	EndBates	Description	TT Objections
DTX-0974		Federal Circuit Approves Apportioning Damages through a Thorough and Reliable Analysis of the Royalty Rate, https://www.mintz.com/insights- center/viewpoints/2231/2018-02-15-federal- circuit-approves-apportioning-damages- through		602, 801-802, 901
DTX-0975			Court Rejects Damages Report for Reliance on Non-Comparable Licenses and for Failure to Account for Unpatented Features in Comparable Licenses, https://www.finnegan.com/en/insights/article s/court-rejects-damages-report-for-reliance-on-non-comparable-licenses-and-for-failure-to-account-for-unpatented-features-in-comparable-licenses.html	602, 801-802, 901
DTX-0976			Docket #208 Final Judgment, in <i>TrackThings LLC v. Amazon.com, Inc.</i> , No. 6:23-cv-00133- ADA (W.D. Tex. Nov. 18, 2024)	401-403, 801-802, 901, MIL
DTX-0977			Kidder Supplemental Exhibit DGK-3 Graphics of Holzen Reports	401-403, 602, 801-802, 901, LIT
DTX-0978			Kidder Supplemental Exhibit DGK-4 Holzen's Calculations Corrected for Time Period	401-403, 602, 801-802, 901, LIT

DTX	BegBates	EndBates	Description	TT Objections
DTX-0979			Answer to Complaint and Cross-Claims, Innovatio IP Ventures, LLC, Patent Litigation NDIL-1-11-cv-09308, July 10, 2012	
DTX-0980			401-403, 602, 801-802, 901	
DTX-0981			[Redacted] Defendants' Opposed Motion to Exclude the Unreliable Testimony of TrackThings' Damages Expert Stephen A. Holzen, April 23, 2024, TrackThings vs. Amazon.com Services LLC and eero LLC (W.D. Tex, 6:23 cv-00133-ADA)	401-403, 801-802, 901, MIL
DTX-0982			First Amended Complaint, XR Communications, LLC dba Vivato Technologies v. NETGEAR, Inc. CDCA-2-17-cv-02959, June 23, 2017	401-403, 602, 801-802, 901
DTX-0983			The latest Eero mesh Wi-Fi routers support Wi-Fi 6, https://www.theverge.com/2020/9/24/21451 035/amazon-new-eero-mesh-wi-fi-gear-wifi-6- price-release-date	801-802, 901, MIL
DTX-0984			Amazon.com, Amazon eero 6 mesh wifi extender, https://www.amazon.com/dp/B085VQVPJK/?t ag=theverge02- 20&ascsubtag=vg0513awD21215076google.com&th=1	401-403, 801-802, 901, MIL

DTX **BegBates EndBates** Description **TT Objections** Amazon eero 6+ mesh wifi system. DTX-0985 401-403, https://www.amazon.com/eero-reliable-801-802, 901, MIL gigabit-connect-Coverage/dp/B08ZK2BHP2/ref=sr 1 1?crid=3 NHSI90YYGMJZ&dib=&th=1 Defendant NETGEAR, Inc.'s objections and 401-403, 602, responses to Plaintiff TrackThings' First Set of 801-802, 901, 1002, Requests for Admissions (Nos. 1-30), dated LIT DTX-0986 October 6, 2023 Physical Exhibit: NETGEAR Orbi SXK30 401-403, 602, DTX-0987 901, U Physical Exhibit: NETGEAR Nighthawk MK72 401-403, 602, DTX-0988 901, U 401-403, 602, Physical Exhibit: NETGEAR Nighthawk MK82 DTX-0989 901, U Physical Exhibit: NETGEAR Orbi RBK852 401-403, 602, DTX-0990 901, U 401-403, 602, Physical Exhibit: NETGEAR Orbi RBKE962 DTX-0991 901, U Physical Exhibit: NETGEAR Nighthawk MK83 401-403, 602, DTX-0992 901, U Physical Exhibit: NETGEAR Orbi RBK853 401-403, 602, DTX-0993 901, U Physical Exhibit: NETGEAR Orbi RBK12 401-403, 602, DTX-0994 901, U Physical Exhibit: NETGEAR Orbi SRK60 401-403, 602, DTX-0995 901, U DTX-0996 Henry Houh Curriculum Vitae TrackThings LLC's Opposition to NETGEAR, 401-403, 801-802, LIT Inc.'s Motion for Judgment on the Pleadings, TrackThings LLC v. NETGEAR, INC., No. 22-981-DTX-0997 RGA (Del. November 30, 2022), ECF 89

DTX	BegBates	EndBates	Description	TT Objections
			1 3	401-403, 801-802, LIT
			Opposition to Defendant NETGEAR, Inc.'s	
			Motion for Summary Judgement of Invalidity,	
DTX-0998			TrackThings LLC v. NETGEAR, INC. , No. 22-981-	
			RGA (Del. November 13, 2022), ECF 266	
DTX-0999			U.S. Patent No. 8,138,715 - Lowenthal	401-403, 602,
D1X-0333				801-802
			NETGEAR Investor Home Page	801-802
DTX-1000			(https://investor.netgear.com/overview/defau	
		lt.aspx)		
			NETGEAR Nighthawk Tri-Band Mesh Wifi 6	602
DTX-1001			System MK82 Data Sheet	801-802, 901
				401-403, 602,
DTX-1002			Physical Exhibit: NETGEAR Nighthawk MK93	901, U
			TrackThings LLC's Responses to Defendant's	401-403, 801-802, LIT
			Concise Statement of Facts in Support of	
			Defendant NETGEAR, Inc.'s Motion for	
			Summary Judgment, TrackThings LLC v.	
DTX-1003			NETGEAR, INC., No. 22-981-RGA (D. Del.	
			November 13, 2024), ECF 267	
1		I .	1	I

#### **EXHIBIT 9**

TRACKTHINGS' WITNESS LIST

#### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

**JURY TRIAL DEMANDED** 

#### **EXHIBIT 9: TRACKTHINGS' WITNESS LIST**

Pursuant to Local Rule 16.3(c)(7), Plaintiff TrackThings LLC ("TrackThings") provide below the names of all witnesses it intends to call to testify, and whether the witness will testify in person or by deposition. The inclusion of a witness on this list does not require TrackThings to call that witness to testify and does not imply or establish that TrackThings have the power to compel the live testimony of that witness or make that witness available to the opposing party. Witnesses are listed alphabetically in each category and no representation is made as to the order in which fact or expert witnesses might be called at trial.

TrackThings has identified these witnesses based on the current understanding of the casein-chief of Defendant NETGEAR, Inc. (collectively, "NETGEAR"). TrackThings reserves the right to revise or supplement this listing, including in response to the parties' pending summary judgment and *Daubert* motions. TrackThings expressly reserves the right to call any witness identified by NETGEAR at any point before or during trial, whether or not listed on TrackThings list below, live or by deposition designations. TrackThings also expressly reserves the right to call any witness live or by deposition designations (or to offer additional deposition designations from

witnesses identified herein) for purposes of rebuttal, impeachment, to establish admissibility or authentication of a document or as required by any of the Court's pretrial or trial rulings. TrackThings also reserves their right to change or modify this list as permitted by the Federal Rules of Civil Procedure, Local Rules, or Orders of the Court.

#### I. TrackThings' Will Call Fact Witnesses

• Thaddeus Gabara (live)

#### II. TrackThings' May Call Fact Witnesses

- Ravindra Bhilave (live or by deposition)
- Joseph Emmanuel (live or by deposition)
- Steve Gielty (live or by deposition)
- Sandeep Harpalani (live or by deposition)
- Aaron Johnson (live or by deposition)
- Anna Lam (live or by deposition)

#### III. TrackThings' Will Call Expert Witnesses

- Dr. Harry Bims (live)
- Steve Holzen (live)

#### IV. TrackThings' May Call Expert Witnesses

- Dr. Henry Houh (live or by deposition)
- Douglas Kidder (live or by deposition)

#### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

**JURY TRIAL DEMANDED** 

**EXHIBIT 10: NETGEAR'S WITNESS LIST** 

Pursuant to Local Rule 16.3(c)(7), Defendant NETGEAR, Inc. ("NETGEAR"), by its attorneys, hereby submits the following list of witnesses whom it may call live or by deposition at trial. NETGEAR reserves the right to modify this list in accordance with Fed. R. Civ. P. 26(a)(3), D. Del. LR 16.3, or in view of other events or changed circumstances that may occur before or during trial. NETGEAR expressly reserves the right to call live or by deposition any witness on its witness list or any witness on Plaintiff's witness lists. This list is not a commitment that NETGEAR will call any particular witness at trial, or a representation that any witness listed is available or will appear for trial. If any NETGEAR witness, Plaintiff's witness, or third party witness is unavailable or refuses to testify live, NETGEAR reserves the right to introduce testimony through deposition. With respect to Plaintiffs' witnesses, NETGEAR reserves the right to introduce testimony through deposition or live examination, as appropriate. Additionally, NETGEAR reserves the right to call any witness, whether listed below or not, to establish authenticity and/or admissibility of any trial exhibit whose authenticity or admissibility is challenged by Plaintiff. NETGEAR reserves the right to call in its case-in-chief any witness identified by Plaintiff and to call by deposition any witness identified by Plaintiff who does not testify at trial or who is unavailable. NETGEAR reserves the right to call any witness on Plaintiff's list either in its case-in-chief, or as a rebuttal witness, or both. NETGEAR also reserves the right to object to the deposition or trial testimony of any individual identified in its disclosures.

- I. NETGEAR's Will Call Fact Witnesses
  - Steve Gielty (live)
- II. NETGEAR's May Call Fact Witnesses
  - Thaddeus Gabara (live or by deposition)
  - Sandeep Harpalani (live or by deposition)

- Ravindra Bhilave (live or by deposition)
- Joseph Emmanuel (live or by deposition)
- Anna Lam (live or by deposition)
- III. NETGEAR's Will Call Expert Witnesses
  - Dr. Henry Houh (live)
  - Douglas Kidder (live)
- IV. NETGEAR's May Call Expert Witnesses
  - Dr. Harry Bims (if called live by TrackThings)
  - Stephen Holzen (if called live by TrackThings)

#### **EXHIBIT 11**

TRACKTHINGS'
DEPOSITION DESIGNATIONS

Plaintiff TrackThings LLC ("Plaintiff" or "TrackThings"), hereby identify its deposition designations for trial pursuant to Federal Rule of Civil Procedure 26(a)(3)(A)(ii) and the Court's Scheduling Order, Order Governing Proceedings, and Pretrial Standing Order.

Plaintiff respectfully reserve the right to amend or supplement this list as necessary. Plaintiff further reserve the right to use deposition testimony not on this list for the purposes of impeachment, cross-examination, rebuttal, and/or refreshing a witness's recollection.

A number of motions and other issues are currently pending before the Court and between the parties which may affect Plaintiff's identification of counter-counter-designated testimony and objections, including summary judgment motions, *Daubert* motions, and motions *in limine*. Accordingly, Plaintiff reserve the right to revise or supplement this disclosure in light of the Court's orders on motions and evidentiary issues, or other developments before trial. Plaintiff further reserve its right to offer additional evidence at trial not identified in its deposition designations with respect to claims and defenses for which it does not carry the burden of proof, and for purposes of impeachment and rebuttal. To the extent NETGEAR truncates any of their designations, Plaintiff the right to use omitted portions of testimony or any of NETGEAR's identified designations or counter-designations. Plaintiff also reserve the right to use any of its affirmative designations of the below-listed witnesses as counter-designations.

Ravindra Bhilave Deposition Designations Deposition Taken: December 8, 2023					
TrackThings Designations	NETGEAR's Objections	NETGEAR's Counter Designations	TrackThings' Objections	TrackThings' Counter- Counter Designations <sup>1</sup>	
page:line (beg) – (end)		page:line (beg) – (end)		page:line (beg) – (end)	
7:17 - 8:1					
11:12 - 11:15					
17:24 - 18:1	R, I	17:17-23		18:18-23, 20:7-13	
23:5 - 23:14	I, IC, M, R	21:12-17, 22:11-19, 23:10-22, 25:4-21, 108:23-109:11, 121:10-17	I = 22:18 I = 25:7 I = 25:13	18:18-23, 20:7-13	
44:18 - 44:21	ARG, 611, I, 602	43:9-21	1 20.13		
44:23 - 45:1					
50:16 - 51:15	R, V, 602				
51:17 - 51:20	V, IE, 602				
51:22 - 52:3	V, IE, 602				
52:5 - 52:11	R, IE, V, 602				
55:2 - 56:4	R, IE, V, 602, 611				
56:6 - 56:14	V, 611, AA, R, ATTY, IE, 602, H				
56:16 - 56:18					

<sup>&</sup>lt;sup>1</sup> **NETGEAR's Position**: TrackThings' counter-counter designations were provided mere hours before the filing deadline. NETGEAR has not had sufficient time to review. NETGEAR reserves the right to object and to further designate counter designations to all of TrackThings' counter-counter designations, at which time NETGEAR will file a supplement to Exhibit 11 with any of NETGEAR's objections and further counter designations.

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57:1 - 57:14	V, 611, AA, R, ATTY H	Y, IE, 27:15-19, 146:19-23	I = 27:17	
57:16 - 57:17				
60:11 - 60:25				
64:1 - 64:6				
64:21 - 65:7	R, H, IE, V, 602, I			
65:20 - 66:3		25:4-10, 25:18-21, 31:10-17, 32:14-19, 66:17-22, 108:23-109:11, 121:10-17	I = 25:6 I = 31:16 I = 66:20	33:2-4, 33:6-9, 121:4-9
66:10 - 66:16	V, 611, IE	25:4-10, 25:18-21, 31:10-17, 32:14-19, 66:17-22	I = 25:6 I = 31:16 I = 66:20	
70:6 - 70:9	V, R, IE, 602, H			
71:15 - 71:18	R, V,			
73:11 - 74:19		74:20-75:3, 75:18-22	I = 74:22	
80:14 - 82:25	R,			
83:2 - 83:4				
83:14 - 84:4				
89:7 - 90:13	R, 611, M, IE, V, 602,	Н		
90:15 - 90:18				
91:6 - 91:8	V, M, 602	90:21-91:2		
91:10 - 91:18	602, 611, M, R	90:21:-91:2		
92:11 - 92:17		92:18-93:7		

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94:14 - 94:22	R, 602, M, V		
94:24 - 95:3			
95:16 - 96:3			
96:9 - 96:13	602, IC, R		
97:16 - 97:21	R, V		
97:23 - 97:24			
98:1 - 98:12	611, IE, M, R		
101:18 - 102:1	V, C		
102:3 - 102:4			
102:14 - 102:17	V, R, I		
102:19 - 102:20			
103:7 - 103:8	V, R		
103:10 - 103:12		102:21-103:6, 104:11-17	
104:3 - 104:7	R, V		
104:9 - 104:10			
110:2 - 110:5	R, I	110:6-11	
115:1 - 115:12	R, H, 602		
120:14 - 120:23	R, 602, IE		
124:13 - 125:4			
125:23 - 126:23	R, V, 602, H		
127:10 - 127:15	602, IH, V		

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127:17 - 128:10	R, V	
129:8 - 130:4	V,	
130:13 - 130:19	R, 602, I	
135:12 - 135:13	V, R	
135:15 - 136:4	136:20-23	
139:13 - 139:18	R, V, IE	
139:20 - 139:20		
142:25 - 143:9	R, C, V	
143:11 - 143:21	R, AA	
146:4 - 146:7	R, 611	

Joseph Emmanuel Deposition Designations Deposition Taken: December 13, 2023					
TrackThings Designations	NETGEAR's Objections	NETGEAR's Counter Designations	TrackThings' Objections	TrackThings' Counter- Counter Designations <sup>2</sup>	
page:line (beg) – (end)		page:line (beg) – (end)		page:line (beg) – (end)	
12:6 - 12:7					
12:10 - 12:11					
15:23 - 16:1					
16:15 - 16:17					
17:18 - 18:9					
19:1 - 19:5	IE, R, V				
19:12 - 19:20	V, R	109:3-10, 71:14-19			
20:8 - 20:9					
20:24 - 21:9	611				
21:14 - 21:18	V,				

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<sup>&</sup>lt;sup>2</sup> **NETGEAR's Position**: TrackThings' counter-counter designations were provided mere hours before the filing deadline. NETGEAR has not had sufficient time to review. NETGEAR reserves the right to object and to further designate counter designations to all of TrackThings' counter-counter designations, at which time NETGEAR will file a supplement to Exhibit 11 with any of NETGEAR's objections and further counter designations.

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21:22 - 23:1	R, V	47:2-9, 49:8-10, 51:10-22, 63:16-20, 86:6-10, 102:4-10	I = 102:7	
25:8 - 26:3	R, 602, V			
26:18 - 27:3	602			
27:14 - 27:23	R,			
28:9 - 28:22				
29:1 - 29:3	V, R, 602			
29:5 - 29:5				
30:13 - 30:15		18:16-18, 29:10-12, 30:21-24		
37:21 - 38:21	R, 602			
38:23 - 38:23	R, 602, S			
40:3 - 40:17				
41:10 - 42:1				
42:3 - 42:11	V, R	56:25-57:6, 65:5-12, 42:3-11, 46:15-17, 49:1-7, 85:23-86:5, 90:12-20		
42:15 - 42:17		42:23-25		
43:7 - 43:20				

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46:11 - 46:20	R, V	46:21-9		
47:10 - 48:18	R.	65:17-66:3, 71:14-19, 80:2-9, 86:6-10, 101:5-8, 104:15-105:2, 107:25-108:3	I = 66:2 I = 71:17 I = 102:7	102:1-3, 102:13-20, 102:22
49:8 - 50:1	V, IE	51:10-22, 63:16-20		
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<sup>&</sup>lt;sup>3</sup> **NETGEAR's Position**: TrackThings' counter-counter designations were provided mere hours before the filing deadline. NETGEAR has not had sufficient time to review. NETGEAR reserves the right to object and to further designate counter designations to all of TrackThings' counter-counter designations, at which time NETGEAR will file a supplement to Exhibit 11 with any of NETGEAR's objections and further counter designations.

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### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Case No. 22-981-JLH (Consolidated)

Plaintiff,

JURY TRIAL DEMANDED

v.

**NETGEAR, INC.,** 

Defendant.

#### **EXHIBIT 12**

#### **DEFENDANT'S DEPOSITION DESIGNATIONS**

Defendant NETGEAR, Inc. ("Defendant" or NETGEAR") has no affirmative deposition designations at this time. Defendant's counter-designations are included in TrackThings' list of deposition designations. Defendant respectfully reserves the right to amend or supplement its deposition designations, including counter-designations. Defendant further reserves the right to use deposition testimony not listed for the purposes of impeachment, cross-examination, rebuttal, and/or refreshing a witness's recollection.

Defendant further reserves the right to revise or supplement its disclosure of deposition designations and counter-designations in light of the Court's orders on motions and evidentiary issues, or other developments before trial, including in response to any revisions made by Plaintiff. Defendant further reserves its right to offer additional evidence at trial not identified in its deposition designations with respect to claims and defenses for which it does not carry the burden of proof, and for purposes of impeachment and rebuttal. To the extent Plaintiff truncates any of their designations, Defendant reserves the right to use omitted portions of testimony or any of Plaintiff's identified designations, counter-designations, or counter-counter-designations.

### **EXHIBIT 13A**

TrackThings' MIL 1 (including NETGEAR'S Opposition and TrackThings' Reply)

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

JURY TRIAL DEMANDED

TRACKTHINGS LLC'S MOTION IN LIMINE NO. 1

Plaintiff TrackThings LLC ("TrackThings") respectfully submits the following motion *in limine*.

I. MIL NO. 1: The parties shall be precluded from introducing evidence, testimony, or argument regarding either party's other litigations or arbitrations, including parallel proceedings in any other court, tribunal, or forum, including ADR proceedings.

Consistent with repeated findings in this District and elsewhere, as well as with Standing Orders on Motions *in Limine* in other districts, TrackThings respectfully requests that the parties be precluded from introducing any evidence, testimony, or argument regarding either party's other litigations or proceedings, including TrackThings' previous litigation against Amazon that involved the Asserted Patent (U.S. Patent No. 9,332,442).

This MIL is routinely granted and should be non-controversial. As Judge Williams recently described, "[c]ourts routinely exclude evidence and argumentation relating to prior litigation because the risk of unfair prejudice substantially outweighs the probative value of any evidence." *Int'l Bus. Machs. Corp. v. Zynga Inc.*, No. CV 22-590-GBW, 2024 WL 3993290, at \*2 (D. Del. Aug. 29, 2024); *see also Helios Software, LLC et al. v. Spectorsoft Corp.*, No. CV-12-81-LPS, 2015 WL 3653098, at \*1 (D. Del. May 22, 2015) ("Such evidence and the Court's rulings—which relate to different accused products—are not probative of the issues that will be the subject of the Jury Trial and, even if such evidence was relevant, any minimal probative value is substantially outweighed by the risk of unfair prejudice to Plaintiffs."); *see, Sunoco Partners Mktg.* & *Terminals LP v. Powder Springs Logistics, LLC*, No. 1:17-cv-01390LPS, D.I. 719, at 3 (D. Del. Nov. 10, 2021); *W.L. Gore & Assocs., Inc. v. C.R. Bard, Inc.*, No. 1:11-cv-00515-LPS-CJB, D.I. 502 at 114:4-11 (D. Del. Dec. 15, 2015) ("I don't want this jury to come close to hearing that this Court has already made a decision on a related patent in the context of this case."); *Oil-Dri Corp. of Am. v. Nestle Purina PetCare Co.*, No. 15 C 1067, 2019 WL 1098925, \*6 (N.D. Ill. Mar. 8,

2019) (granting patentee's motion to preclude the accused infringer from making any reference to another infringement suit concerning a different accused product that the patentee had asserted against the accused infringer).

Based on the Parties' meet-and-confer process, TrackThings understands that Netgear does not generally oppose this MIL, but seeks to carve out an exception for TrackThings' previous litigation against Amazon: TrackThings LLC v. Amazon.com, Inc. et al., Case No. 23-cv-133-ADA ("the Amazon Matter"). In the Amazon Matter, TrackThings asserted three patents, including the Asserted Patent, against Amazon Services LLC and eero LLC in accusing certain eero mesh products of infringement. Unsurprisingly, given that Netgear and Amazon are different companies, none of the same products are at issue here. Because the Amazon Matter involved entirely different products, evidence related to the proceedings in the Amazon case is irrelevant to this case, and would be both highly prejudicial to TrackThings and highly confusing to the jury. See Int'l Bus. Machs., 2024 WL 3993290, at \*2. ("Evidence of a prior summary judgment ruling on unrelated products, for instance, can be highly confusing to the jury and often has very little relevance to the relevant case."). Moreover, the Amazon Matter's proceedings have nothing to do with whether the Netgear products, which are unrelated to the eero products, infringe the Asserted Patent. Under Rules 401-403, this MIL should be granted.

Indeed, during the meet and confer process, Netgear did not identify any reason why the Amazon Matter was relevant here or germane to any issue for the jury to decide other than the fact that it involved the same Asserted Patent. But none of Netgear's experts have opined that eero's infringement or non-infringement of the Asserted Patent is at all relevant to whether the Netgear products infringe. Similarly, Netgear's damages expert does not rely on any of the Amazon Matter's proceedings or anything about the eero products at all. Neither do TrackThings' experts.

Notably, TrackThings' proposed MIL exactly tracks standing orders on motions *in limine* that other courts have entered. *See, e.g.*, Ex. A, Motion *In Limine* No. 13 in Judge Albright's Order on Motions *In Limine*; *see also*, Ex. B, Motion *In Limine* No. 13 in Chief Judge Gilstrap's Order on Motions *In Limine*. Neither of those standing orders, nor any of the authority cited above, includes any sort of carve out for litigation involving an overlap in patents. In fact, in *Helios*, this Court rejected the carve out Netgear seeks here, holding evidence from a related litigation with the same plaintiff was not relevant and unfairly prejudicial. 2015 WL 3653098, at \*1. TrackThings therefore respectfully requests that the Court preclude the parties from introducing any evidence, testimony, or argument from other litigations involving either of the parties, including the Amazon Matter.

Dated: New York, NY April 1, 2025 Respectfully submitted,

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#### /s/ Alexandra M. Joyce

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Attorneys for Plaintiff TrackThings LLC

# Exhibit A

January 23, 2024
CLERK, U.S. DISTRICT COURT
WESTERN DISTRICT OF TEXAS

BY: J. Galindo-Beaver

#### IN THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS WACO DIVISION

#### STANDING ORDER GOVERNING PROCEEDINGS (OGP) 4.4—PATENT CASES

This OGP governs proceedings in all patent cases pending before the undersigned or Judge Derek T. Gilliland and takes effect upon entry in all patent cases, except where noted. If there are conflicts between this OGP and prior versions in existing cases that the parties are unable to resolve, the parties are encouraged to contact the Court for guidance via email to the Court's law clerk.

Parties should generally email any inquiries to the Court's law clerk. The Court's voicemail is not checked regularly. Email is the preferred contact method.

Parties should generally use the following email address that includes the Court's law clerks for both Judge Albright and Judge Gilliland:

TXWDml LawClerks WA JudgeAlbright&Gilliland@txwd.uscourts.gov.

Messages directed only to Judge Albright's law clerks may be sent to:

TXWDml LawClerks WA JudgeAlbright@txwd.uscourts.gov.

Messages directed only to Judge Gilliland's law clerks may be sent to:

TXWDml NoJudge Chambers WA JudgeGilliland@txwd.uscourts.gov.

#### I. NOTICE OF READINESS<sup>1</sup>

In all patent cases pending before the undersigned or Judge Gilliland, the parties are directed to jointly file the Case Readiness Status Report ("CRSR") in the format attached as Appendix B: (a) within 7 days after the Defendant (or at least one Defendant among a group of related Defendants sued together) has responded to the initial pleadings in cases where there are no CRSR Related Cases, or (b) when there are CRSR Related Cases, within 7 days after the last Defendant (or last Defendant group when at least one Defendant among the group has responded) among the CRSR Related Cases has responded to the initial pleadings. The CRSR shall be filed in each case and identify all other CRSR Related Cases. For this Order, cases shall be considered CRSR Related Cases when they meet both criteria: (1) the cases are filed within 30 days after the first case is filed, and (2) the cases share at least one common asserted patent.

The parties shall meet and confer before jointly filing the CRSR. Plaintiff shall have responsibility for filing the CRSR on time. If the parties have any pre-*Markman* issues needing resolution, the parties shall email the Court a joint submission of the parties' positions after filing the CRSR so the Court can consider whether to hold a hearing to resolve these issues. If the

<sup>&</sup>lt;sup>1</sup> This supersedes the March 7, 2022 Standing Order Regarding Notice of Readiness for Patent Cases.

parties do not have any pre-Markman issues needing resolution, then the parties need not email the CRSR to the Court.

The Case Management Conference ("CMC") shall be deemed to occur 14 days after the filing date of the CRSR. If the CRSRs in CRSR Related Cases are not all submitted on the same date, the CMC shall be deemed to occur 14 days after the last CRSR in those CRSR Related Cases is filed. The Court intends to coordinate the CRSR Related Cases on the same schedule with a single *Markman* hearing, so the parties should plan accordingly. In all cases, the *Markman* hearing shall be initially scheduled for 23 weeks after the CMC and should be included in the parties' proposed Scheduling Order in accordance with this Order.

#### II. GENERAL DEADLINES

The following deadlines apply:

- 1. Patent cases shall be set for a Rule 16 CMC in accordance with the preceding section.
- 2. Not later than 7 days before the CMC. The plaintiff shall serve preliminary infringement contentions chart setting forth where in the accused product(s) each element of the asserted claim(s) are found. The plaintiff shall also identify the priority date (*i.e.*, the earliest date of invention) for each asserted claim and produce: (1) all documents evidencing conception and reduction to practice for each claimed invention, and (2) a copy of the file history for each patent in suit.
- 3. Two weeks after the CMC. The parties shall file a **motion** to enter an agreed Scheduling Order that generally tracks the exemplary schedule attached as Exhibit A to this OGP, which should suit most cases. If the parties cannot agree, the parties shall submit a joint motion for entry of a Scheduling Order briefly setting forth their scheduling disagreement. Absent agreement of the parties, the plaintiff shall be responsible for the timely submission of this and other joint filings. When filing any Scheduling Order, the parties shall also jointly send an editable copy to the Court's law clerk.
- 4. Seven weeks after the CMC. The defendant shall serve preliminary invalidity contentions in the form of (1) a chart setting forth where in the prior art references each element of the asserted claim(s) are found, (2) an identification of any limitations the defendant contends are indefinite or lack written description under § 112, and (3) an identification of any claims the defendant contends are directed to ineligible subject matter under § 101. The § 101 contention shall (1) identify the alleged abstract idea, law of nature, and/or natural phenomenon in each challenged claim; (2) identify each claim element alleged to be well-understood, routine, and/or conventional; and (3) to the extent not duplicative of §§ 102/103 prior art contentions, prior art for the contention that claim elements are well-understood, routine, and/or conventional. The defendant shall also produce (1) all prior art referenced in the invalidity contentions, and (2) technical

documents, including software where applicable, sufficient to show the operation of the accused product(s).<sup>2</sup>

#### III. GENERAL DISCOVERY LIMITS

Except with regard to venue, jurisdictional, and claim construction-related discovery, all other discovery shall be stayed until after the *Markman* hearing. Notwithstanding this general stay of discovery, the Court will permit limited discovery by agreement of the parties, or upon request, where exceptional circumstances warrant it. For example, if discovery outside the United States is contemplated via the Hague, the Court is inclined to allow such discovery to commence before the *Markman* hearing.

Following the *Markman* hearing, the following discovery limits apply. The Court will consider reasonable requests to adjust these limits should circumstances warrant.

1. Interrogatories: 30 per side<sup>3</sup>

Requests for Admission: 45 per side
 Requests for Production: 75 per side

4. Fact Depositions: 70 hours per side (for both party and non-party witnesses combined)

5. Expert Depositions: 7 hours per report<sup>4</sup>

<u>Electronically Stored Information</u>. As a preliminary matter, the Court will not require general search and production of email or other electronically stored information (ESI) related to email (such as metadata), absent a showing of good cause. If a party believes targeted email/ESI discovery is necessary, it shall propose a procedure identifying custodians and search terms it believes the opposing party should search. The opposing party can oppose or propose an alternate plan. If the parties cannot agree, they shall contact the Court in accordance with the procedures below, to discuss their respective positions.

#### IV. DISCOVERY DISPUTES

<u>Standing Referral</u>. Under Rule 1 of the Local Rules for the Assignment of Duties to United States Magistrate Judges, Appendix C of the Local Court Rules of the United States District Court for the Western District of Texas, discovery disputes in patent cases pending before the

<sup>&</sup>lt;sup>2</sup> To the extent it may promote early resolution, the Court encourages the parties to exchange license and sales information, but any such exchange is optional during the pre-*Markman* phase of the case.

<sup>&</sup>lt;sup>3</sup> A "side" shall mean the plaintiff (or related plaintiffs suing together) on the one hand, and the defendant (or related defendants sued together) on the other hand. If the Court consolidates related cases for pretrial purposes, with regard to calculating limits imposed by this OGP, a "side" shall be interpreted as if the cases were proceeding individually. For example, in consolidated cases the plaintiff may serve up to 30 interrogatories on each defendant, and each defendant may serve up to 30 interrogatories on the plaintiff.

<sup>&</sup>lt;sup>4</sup> For example, if a single technical expert submits reports on both infringement and invalidity, he or she may be deposed for up to 14 hours in total.

undersigned are referred to United States Magistrate Judge Derek T. Gilliland for a determination under 28 U.S.C. § 636(b)(1)(A).

<u>Procedure.</u> A party may not file a Motion to Compel discovery unless: (1) lead counsel with decision making authority have met and conferred in good faith to try to resolve the dispute, and (2) the party has contacted the Court's law clerk to summarize the dispute and the parties' respective positions. When contacting the Court's law clerk for discovery or procedural disputes, the following procedures shall apply.

If the parties remain at an impasse after lead counsel have met and conferred, the requesting party shall email a summary of the issue(s) and specific relief requested to all counsel of record. The summary of the issue shall not exceed 500 words for one issue or a combined 1,000 words for multiple issues. The responding party has 3 business days<sup>6</sup> thereafter to provide an email response, also not to exceed 500 words for one issue or a combined 1,000 words for multiple issues. The specific relief requested should propose the exact language to be issued in a court order for each part of every disputed issue. The specific relief requested does not count toward the word limits. The Court encourages the parties to provide their submission in a Word document in the following table format, which clearly identifies the disputed issues and specific relief requested.

#### Example:

Issue	Requesting Party's Position	Responding Party's Position
RFP 1:	Responding Party didn't produce	We found no sales records of the
All sale records of the Product.	anything. Responding Party keeps its sales records in a sales database.	Product in the sales database.
	Relief: Order that "Responding Party must produce a copy of the	Relief: Find that "no documents responsive to RFP 5 exist" and deny
	sales database within 7 days."	Requesting Party's relief.
ROG 5:	Responding Party only identified a	We identified the relevant employees.
Identify all employees	subset of the employees.	The other employees are not relevant, and it is too burdensome to identify
who worked on the	Relief: Order that "Responding Party is compelled to fully respond	every employee.
Product.	to ROG 5 by identifying the names and locations of the remaining	Relief: Order that "Responding Party need not identify any other employees in response to ROG 5."

<sup>&</sup>lt;sup>5</sup> The procedure outlined below is also the Court's preferred mechanism for handling disputes regarding procedural matters such as extensions of time, excess pages, narrowing claims and prior art, amending invalidity and infringement contentions, etc. If the parties are unsure about whether a particular dispute should be handled by motion or discovery dispute procedure, they should contact the Court's clerks.

<sup>&</sup>lt;sup>6</sup> Business days exclude weekends and federal holidays.

employees who worked on Product by [date]."

Once the opposing party provides its response, the requesting party shall email the summaries of the issues to the Court's law clerks for both Judge Albright and Judge Gilliland with opposing counsel copied. If a hearing is requested, the parties shall indicate in the email whether any confidential information will be presented. Thereafter, the Court will provide guidance to the parties regarding the dispute or arrange a Zoom or in-person hearing.

Written Order. Within 7 days of the discovery hearing, the parties shall email a joint proposed order to the Court's law clerk that includes the parties' positions from their dispute chart, the parties' requested relief, and the parties' understanding of the Court's ruling so that the arguments and outcome can be docketed. Parties shall send an editable version of the proposed order to the Court's law clerk with any disputed language in red and blue text. Failure to provide a proposed written order for the docket results in waiver of the dispute for appeal.

#### V. <u>VENUE & JURISDICTIONAL DISCOVERY</u>

The Court hereby<sup>8</sup> establishes the following presumptive limits on discovery related to venue and jurisdiction: each party is limited to 5 interrogatories, 10 Requests for Production, and 10 hours of deposition testimony. The time to respond to such discovery requests is reduced to 20 days. If a party believes these limits should be expanded, the party shall meet and confer with opposing counsel and, if an impasse is reached, the requesting party is directed to contact the Court's law clerk for a telephonic hearing.

Venue or jurisdictional discovery automatically opens upon the filing of an initial venue or jurisdictional motion and shall be completed no later than 10 weeks after the filing of such motion. Parties shall file a notice of venue or jurisdictional discovery if the discovery will delay a response to a transfer or jurisdictional motion.

#### VI. MOTIONS FOR TRANSFER

This section applies to all cases filed on or after March 7, 2022. Otherwise, the Second Amended Standing Order Regarding Motions for Inter-District Transfer controls earlier-filed cases.

A motion to transfer anywhere shall be filed within 3 weeks after the CMC or within 8 weeks of receiving or waiving service of the complaint, whichever is later. Thereafter, a movant must show good cause for any delay and seek leave of court. The deadline for plaintiff's response is 2 weeks after the completion of venue or jurisdictional discovery. The deadline for Defendant's reply is 2 weeks after the filing of the response.

<sup>&</sup>lt;sup>7</sup> This supersedes the June 17, 2021 Standing Order for Discovery Hearings in Patent Cases.

<sup>&</sup>lt;sup>8</sup> This supersedes the June 8, 2021 Amended Standing Order Regarding Venue and Jurisdictional Discovery Limits for Patent Cases.

The following page limits and briefing schedule apply to motions to transfer:

- 1. Opening 15 pages
- 2. Response 15 pages, due 14 days after the completion of venue or jurisdictional discovery, if such discovery is conducted; otherwise, 14 days after the Opening brief
- 3. Reply 5 pages, due 14 days after the Response brief

All parties who have filed a motion to transfer shall provide the Court with a status report indicating whether the motion has been fully briefed at each of the following times: 1) when the motion to transfer becomes ready for resolution;; 2) at 4 weeks before the *Markman* hearing date if the motion to transfer remains unripe for resolution; and 3) if there are multiple *Markman* hearings, the status report is due 6 weeks before the first scheduled *Markman* hearing. In addition, if by 1 week before the *Markman* hearing the Court has not ruled on any pending motion to transfer, the moving party is directed to email the Court's law clerk (and the technical advisor, when appointed), and indicate that the motion to transfer is pending.

If a motion to transfer remains pending, the Court will either promptly resolve the pending motion before the *Markman* hearing, or postpone the *Markman* hearing. Whenever a *Markman* hearing is postponed pursuant to this OGP (*e.g.*, because the transfer motion has not yet ripened or only recently ripened), Fact Discovery will begin one day after the originally scheduled *Markman* hearing date.

### VII. <u>MEET AND CONFER REQUIREMENT FOR</u> <u>EARLY MOTIONS TO DISMISS INDIRECT AND WILLFUL INFRINGEMENT</u>

Any party seeking to dismiss claims of indirect or willful infringement before fact discovery must first meet and confer with the opposing party to discuss dismissing those allegations without prejudice, with leave to re-plead those allegations with specificity if supported by a good faith basis under Rule 11. Under this agreement, the patent owner may re-plead those allegations within three months after fact discovery opens, and the parties agree to permit fact discovery on indirect and willful infringement during those three months. The party moving to dismiss must attach a certification of compliance with this OGP to its motion to dismiss.

An agreement to dismiss under this section shall be filed as a joint notice instead of as a motion.

#### VIII. <u>INTERIM PROTECTIVE ORDER</u>

The Court provides a Model Protective Order on its website. Pending entry of the final Protective Order, the Court issues the following interim Protective Order to govern the disclosure of confidential information:

If any document or information produced in this matter is deemed confidential by the producing party and if the Court has not entered a protective order, until a protective order is issued by the Court, the document shall be marked "confidential" or with some other confidential designation (such as "Confidential – Outside Attorneys' Eyes Only") by the disclosing party and disclosure of the confidential document or information shall

be limited to each party's outside attorney(s) of record and the employees of such outside attorney(s).

If a party is not represented by an outside attorney, disclosure of the confidential document or information shall be limited to one designated "in house" attorney, whose identity and job functions shall be disclosed to the producing party 5 days prior to any such disclosure, in order to permit any motion for protective order or other relief regarding such disclosure. The person(s) to whom disclosure of a confidential document or information is made under this OGP shall keep it confidential and use it only for purposes of litigating the case.

#### IX. <u>CLAIM CONSTRUCTION</u>

#### Limits for Number of Claim Terms to be Construed

<u>Terms for Construction</u>. Based on the Court's experience, the Court believes that it should have presumed limits on the number of claim terms to be construed. The "presumed limit" is the maximum number of terms that each side may request the Court to construe without further leave of Court. If the Court grants leave for additional terms to be construed, depending on the complexity and number of terms, the Court may split the *Markman* hearing into multiple hearings.

The presumed limits based on the number of patents-in-suit are as follows:

1-2 Patents	3-5 Patents	More than 5 Patents
8 terms	10 terms	12 terms

When the parties submit their joint claim construction statement, in addition to the term and the parties' proposed constructions, the parties should indicate which party or side proposed that term, or if that was a joint proposal.

#### **Briefing Procedure and Page Limits**

The Court will require non-simultaneous *Markman* briefing with the following default page limits. When exceptional circumstances warrant, the Court will consider reasonable requests to adjust these limits. These page limits shall also apply collectively for coordinated and consolidated cases; however, the Court will consider reasonable requests to adjust page limits in consolidated cases where circumstances warrant. The Court has familiarity with the law of claim construction and encourages the parties to forego lengthy recitations of legal authorities and to instead focus on the substantive issues unique to each case.

Unless otherwise agreed to by the parties, the default order of terms in the parties' briefs shall be based on 1) the patent number (lowest to highest), the claim number (lowest to highest), and order of appearance within the lowest number patent and claim. An example order may be as follows:

1. 10,000,000 Patent, Claim 1, Term 1

- 2. 10,000,000 Patent, Claim 1, Term 2 (where Term 2 appears later in the claim than does Term 1)
- 3. 10,000,000 Patent, Claim 2, Term 3 (where Term 3 appears later in the claim than does Terms 2 and 3)
- 4. 10,000,001 Patent, Claim 1, Term 4
- 5. 10,000,001 Patent, Claim 3, Term 5
- 6. 10,000,002 Patent, Claim 2, Term 6

If the same or similar terms appear in multiple claims, those same or similar terms should be ordered according to the lowest patent number, lowest claim number, and order of appearance within the patent and claim.

Brief	1-2 Patents	3-5 Patents	More than 5 Patents
Opening (Defendant)	20 pages	30 pages	30 pages, plus 5 additional pages for each patent over 5 up to a maximum of 45
Response (Plaintiff)	20 pages	30 pages	30 pages, plus 5 additional pages for each patent over 5 up to a maximum of 45 pages
Reply (Defendant)	10 pages	15 pages	15 pages, plus 2 additional pages for each patent over 5 up to a maximum of 21 pages
Sur-Reply (Plaintiff)	10 pages	15 pages	15 pages, plus 2 additional pages for each patent over 5 up to a maximum of 21 pages

After briefing concludes, the parties shall file a Joint Claim Construction Statement and email an editable copy to the Court's law clerks.

#### Technology Tutorials and Conduct of the Markman Hearing

Technology tutorials are optional, especially in cases where a technical advisor has been appointed. If the parties submit one, the tutorial should be in electronic form, with voiceovers, and submitted at least 10 days before the *Markman* hearing. In general, tutorials should be: (1) directed to the underlying technology (rather than argument related to infringement or validity), and (2) limited to 15 minutes per side. The tutorial will not be part of the record and the parties may not rely on or cite to the tutorial in other aspects of the litigation.

The Court generally sets aside one hour for the *Markman* hearing; however, the Court is open to reserving more or less time, depending on the complexity of the case and input from the parties. As a general rule, the party opposing the Court's preliminary construction shall go first. If both parties oppose the Court's preliminary construction, the plaintiff shall typically go first.

The Court will provide preliminary constructions to the parties ahead of the *Markman* hearing. At the *Markman* hearing, the Court encourages oral arguments that fine-tune the preliminary constructions over arguments repeated from the briefs.

#### X. GENERAL ISSUES

- 1. The Court will entertain reasonable requests to streamline the case schedule and discovery. The Parties should contact the Court's law clerk when a change might help streamline the case.
- 2. The Court is generally willing to extend the response to the Complaint up to 45 days if agreed by the parties. Extensions beyond 45 days from the original answer date are disfavored and require a motion.
- 3. Speaking objections during depositions are improper. Objections during depositions shall be stated concisely and in a nonargumentative and nonsuggestive manner. Examples of permissible objections include: "Objection, leading," "Objection, compound," "Objection, vague." Other than to evaluate privilege issues, counsel should not confer with a witness while a question is pending. Counsel may confer with witnesses during breaks in a deposition without waiving any otherwise applicable privilege.
- 4. Within 10 days of any new changes relevant to AO 120 (Report on the Filing or Determination of an Action Regarding a Patent or Trademark), the Plaintiff must update the form with any new changes to the case such as amended complaints or new claims.
- 5. Plaintiff must file a notice informing the Court when an IPR is filed, the expected time for an institution decision, and the expected time for a final written decision, within 2 weeks of the filing of the IPR.
- 6. After the trial date is set, the Court will not move the trial date except in extreme situations. If a party believes that the circumstances warrant continuing the trial date, the parties are directed to contact the Court's law clerk.
- 7. Appendix C, Order on Motions *in Limine* (MILs), shall apply equally to all parties. In addition to the standard MILs, each party will be permitted to propose and argue (if opposed) up to five (5) of its own MILs at the Pretrial Conference. MILs outside these limits will not be considered. MILs that are multifarious so as to exceed the above limitations will also not be considered. MILs that simply restate the rules of evidence or other legal principles or that are more appropriately motions for summary judgment or *Daubert* motions are improper.

- 8. The Court does not limit the number of motions for summary judgment (MSJs) or *Daubert* motions<sup>9</sup> a party may file. However, absent leave of Court, the cumulative page limit for opening briefs for all MSJs is 40 pages per side, for all *Daubert* motions is 40 pages per side, and for all MILs is 15 pages per side. Each responsive MSJ, *Daubert*, and MIL brief is limited to the pages utilized in the opening brief or by the local rules, whichever is greater; and the cumulative pages for responsive briefs shall be no more than cumulative pages utilized in the opening briefs. Reply brief page limits shall be governed by the local rules, but in no event shall the cumulative pages of reply briefs exceed 20 pages per side for all MSJs, 20 pages per side for all *Daubert* motions, and 10 pages for all MILs.
- 9. The Court no longer requires physical copies of *Markman* briefs, summary judgment motions, and *Daubert* motions. Instead, the parties shall jointly contact the Court's law clerk, at least ten days before the hearing, for a Box link to provide an electronic copy of the briefs, <sup>10</sup> exhibits, and the optional technology tutorial. <sup>11</sup> Absent agreement to the contrary, the plaintiff shall be responsible for providing the electronic copies via Box. For *Markman* briefs, the parties should also include a copy of all patents-in-suit and an editable copy of the Joint Claim Construction Statement. If the Court appoints a technical advisor, each party shall deliver the same to the technical advisor on a USB drive, also 10 days before the hearing.
- 10. When filing the Joint Claim Construction Statement, proposed Protective Order, or proposed Scheduling Order, the parties shall also email the Court's law clerk a Word version of the filed documents.
- 11. For all non-dispositive motions, the parties shall submit a proposed Order. The proposed Order shall omit the word "Proposed" from the title.
- 12. For non-private remote hearings in front of Judge Albright, the public is allowed to attend via the call-in information below. However, the public shall not attempt to access video of those hearings and anyone found not to be in compliance is subject to sanctions by the Court.
  - +16692545252,,1613131172#,,,,\*120804# US (San Jose) +16468287666,,1613131172#,,,,\*120804# US (New York)
- 13. Any party who intends to present confidential information in a remote hearing shall email and notify the Court's law clerk to request a private Zoom setup that will not be publicly broadcasted.
- 14. When citing cases or exhibits in a motion, parties shall pin cite the relied-upon section of a case or exhibit. For any motion referencing an expert report (e.g., motions to strike, Daubert

<sup>&</sup>lt;sup>9</sup> This includes any motion filed after opening expert reports that seeks to strike or preclude the use of any part of an expert report for any reason, including procedural reasons.

<sup>&</sup>lt;sup>10</sup> But if the Court appoints a technical advisor for claim construction, the parties should not provide a copy of the *Markman* briefs to the Court.

<sup>&</sup>lt;sup>11</sup> The Court can no longer receive USB drives due to security concerns, but the technical advisors can.

motions, and summary judgment motions), the Court requires full copies of the expert report attached as an exhibit. The Court encourages parties to highlight and/or annotate the relied-upon sections of exhibits or expert reports (*e.g.*, patents, transcripts, contracts) to facilitate the Court's analysis of the motion. A supporting declaration should identify if any exhibit is highlighted or annotated.

- 15. Parties shall promptly notify the Court if they reach a settlement in a case and request to stay any deadlines.
- 16. When filing a patent case, the Plaintiff shall file a "Notice of Related Cases" on the day of filing the patent case. For the Notice of Related Cases, cases shall be considered "related" when they share at least one common asserted patent. <sup>12</sup> The Notice of Related Cases shall indicate the case caption, case number, and presiding Judge of any related case.
- 17. A pleading, motion, or other submission shall be typed or printed in 12-point or larger font (including footnotes), double-spaced, on paper sized 8½" x 11" with one-inch margins on all sides and shall be endorsed with the style of the case and the descriptive name of the document. Headings, footnotes, and quotations more than two lines long may be single-spaced.
- 18. With respect to calculating page limits for motions not otherwise addressed in this Order, such that Local Rule CV-7 applies, at least the following are examples of motions the Court considers to be "case management motions" where the 10-page limit shall apply: Motions to Stay, Motions for Continuance, and Motions to Amend Pleadings, Contentions, or Scheduling Orders.

#### XI. TRIAL & POST-TRIAL ISSUES

- Preliminary and Final Jury Instructions with disputed language must include citations to prior
  jury instructions given by this Court. Parties shall send an editable version of the proposed
  instructions to the Court's law clerk with the disputed language in red and blue text.
  Instructions should exactly track the language of prior instructions to the extent possible.
  Language from the Court's most recent Jury Instructions is preferred.
- 2. Parties shall file a joint proposed final judgement within 14 days of a jury verdict. If one party disputes the language of the order, then that party shall send an editable version of the proposed order to the Court's law clerk with the disputed language in red and blue text. The Court discourages the parties from providing extensive substantive argument in the editable version of the proposed judgment.
- 3. On the same day that post-trial briefing is completed, the parties shall email the Court's law clerks with a list of the pending motions and request a hearing, if desired.

<sup>&</sup>lt;sup>12</sup> The CRSR and Notice of Related Cases use different definitions.

4. Prior to entering an order regarding post-trial bonds, parties are directed to reach out to the District Clerks Office to obtain specific information needed to complete the order. The Office can be reached at <a href="https://doi.org/10.1501/TXWDWacoDistrictClerksOffice@txwd.uscourts.gov">TXWDWacoDistrictClerksOffice@txwd.uscourts.gov</a> or 254-750-1501.

SIGNED this 23rd day of January, 2024.

ALAN D ALBRIGHT

UNITED STATES DISTRICT JUDGE

#### XII. <u>APPENDIX A – EXEMPLARY SCHEDULE</u>

Deadline	Item
8 weeks after receiving or waiving service of complaint or 3 weeks after the CMC, whichever is later.	Deadline to file a motion to transfer. After this deadline, movants must seek leave of Court and show good cause for the delay.
7 days before CMC	Plaintiff serves preliminary <sup>13</sup> infringement contentions in the form of a chart setting forth where in the accused product(s) each element of the asserted claim(s) are found. Plaintiff shall also identify the earliest priority date ( <i>i.e.</i> , the earliest date of invention) for each asserted claim and produce: (1) all documents evidencing conception and reduction to practice for each claimed invention, and (2) a copy of the file history for each patent in suit.
2 weeks after CMC	The Parties shall file a motion to enter an agreed Scheduling Order. If the parties cannot agree, the parties shall submit a separate Joint Motion for entry of Scheduling Order briefly setting forth their respective positions on items where they cannot agree. Absent agreement of the parties, the Plaintiff shall be responsible for the timely submission of this and other Joint filings.
7 weeks after CMC	Defendant serves preliminary invalidity contentions in the form of (1) a chart setting forth where in the prior art references each element of the asserted claim(s) are found, (2) an identification of any limitations the Defendant contends are indefinite or lack written description under section 112, and (3) an identification of any claims the Defendant contends are directed to ineligible subject matter under section 101.  Defendant shall also produce (1) all prior art referenced in the invalidity contentions, and (2) technical documents, including software where applicable, sufficient to show the operation of the accused product(s).

<sup>&</sup>lt;sup>13</sup> The parties may amend preliminary infringement contentions and preliminary invalidity contentions without leave of court so long as counsel certifies that it undertook reasonable efforts to prepare its preliminary contentions and the amendment is based on material identified after those preliminary contentions were served and should do so seasonably upon identifying any such material. Any amendment to add patent claims requires leave of court so that the Court can address any scheduling issues.

9 weeks after CMC	Parties exchange claim terms for construction.
11 weeks after CMC	Parties exchange proposed claim constructions.
12 weeks after CMC	Parties disclose extrinsic evidence. The parties shall disclose any extrinsic evidence, including the identity of any expert witness they may rely upon with respect to claim construction or indefiniteness. With respect to any expert identified, the parties shall identify the scope of the topics for the witness's expected testimony. With respect to items of extrinsic evidence, the parties shall identify each such item by production number or produce a copy of any such item if not previously produced.
13 weeks after CMC	Deadline to meet and confer to narrow terms in dispute and exchange revised list of terms/constructions.
14 weeks after CMC	Defendant files Opening claim construction brief, including any arguments that any claim terms are indefinite.
17 weeks after CMC	Plaintiff files Responsive claim construction brief.
19 weeks after CMC	Defendant files Reply claim construction brief.
19 weeks after CMC	Parties to jointly email the law clerks (see OGP at 1) to confirm their <i>Markman</i> date and to notify if any venue or jurisdictional motions remain unripe for resolution.
21 weeks after CMC	Plaintiff files a Sur-Reply claim construction brief.
3 business days after submission of sur-reply	Parties submit Joint Claim Construction Statement and email the law clerks an editable copy.  See General Issues Note #9 regarding providing copies of the briefing to the Court and the technical advisor (if appointed).
22 weeks after CMC (but at least 10 days before <i>Markman</i> hearing)	Parties submit optional technical tutorials to the Court and technical advisor (if appointed).

<sup>14</sup> Any party may utilize a rebuttal expert in response to a brief where expert testimony is relied upon by the other party.

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<sup>&</sup>lt;sup>15</sup> All deadlines hereafter follow the original *Markman* hearing date and do not change if the Court delays the *Markman* hearing.

	the Court's law clerk for an estimate of the amount of trial time anticipated per side. The parties shall file a Joint Report within 5 business days regarding the results of the meet and confer.
40 weeks after Markman hearing	Dispositive motion deadline and <i>Daubert</i> motion deadline.  See General Issues Note #9 regarding providing copies of the briefing to the Court and the technical advisor (if appointed).
	Deadline for parties desiring to consent to trial before the magistrate judge to submit Form AO 85, "Notice, Consent, And Reference Of A Civil Action To A Magistrate Judge," available at <a href="https://www.uscourts.gov/forms/civil-forms/notice-consent-and-reference-civil-action-magistrate-judge">https://www.uscourts.gov/forms/civil-forms/notice-consent-and-reference-civil-action-magistrate-judge</a> .
42 weeks after <i>Markman</i> hearing	Serve Pretrial Disclosures (jury instructions, exhibits lists, witness lists, deposition designations).
44 weeks after <i>Markman</i> hearing	Serve objections to pretrial disclosures/rebuttal disclosures.
45 weeks after <i>Markman</i> hearing	Serve objections to rebuttal disclosures; file motions in limine.
46 weeks after Markman hearing	File Joint Pretrial Order and Pretrial Submissions (jury instructions, exhibits lists, witness lists, deposition designations); file oppositions to motions <i>in limine</i> From this date onwards, the parties are obligated to notify the Court of any changes to the asserted patents or claims. Such notification shall be filed on the docket within seven (7) days of the change and shall include a complete listing of all asserted patents and claims. If a change to the asserted patents or claims requires leave of court (for example, if a party is moving for leave to assert additional claims), notification shall not be required until the Court grants leave, at which point the notification must be filed within seven (7) days.
47 weeks after <i>Markman</i> hearing	File Notice of Request for Daily Transcript or Real Time Reporting. If a daily transcript or real time reporting of court proceedings is requested for trial, the party or parties making said request shall file a notice with the Court and email the Court Reporter, Kristie Davis at kmdaviscsr@yahoo.com
	Deadline to file replies to motions in limine.

48 weeks after <i>Markman</i> hearing	Deadline to meet and confer regarding remaining objections and disputes on motions <i>in limine</i> .
8 weeks before trial	Parties to jointly email the Court's law clerk (See OGP at 1) to confirm their pretrial conference and trial dates.
3 business days before Final Pretrial Conference.	File joint notice identifying remaining objections to pretrial disclosures and disputes on motions <i>in limine</i> .
49 weeks after <i>Markman</i> hearing (or as soon as practicable)	Final Pretrial Conference. Held in person unless otherwise requested.
52 weeks after <i>Markman</i> hearing (or as soon as practicable) <sup>16</sup>	Jury Selection/Trial.

<sup>16</sup> If the actual trial date materially differs from the Court's default schedule, the Court will consider reasonable amendments to the case schedule post-*Markman* that are consistent with the Court's default deadlines in light of the actual trial date.

### XIII. <u>APPENDIX B – EXEMPLARY CASE READINESS STATUS REPORT</u>

### UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS WACO DIVISION

[Plaintiff],

Plaintiff

V.

[Defendant],

Defendant

### **CASE READINESS STATUS REPORT**

Plaintiff [names] and Defendant [name(s)], hereby provide the following status report.

### **SCHEDULE**

A scheduling order [has been proposed and awaits entry by the Court, has been issued by the Court, or has not yet been filed].

[Indicate if a *Markman* date has been set, proposed, or not yet proposed.]

[Indicate if a trial date has been set, proposed, or not yet proposed.]

### FILING AND EXTENSIONS

Plaintiff's Complaint was filed on [filing date]. There have been [one/two] extension[s] for a total of days.

### **RESPONSE TO THE COMPLAINT**

[Indicate if/when the Defendant(s) responded to the Complaint, whether it was an Answer or Motion, and whether any counterclaims were filed other than counterclaims for non-infringement or invalidity]

### **PENDING MOTIONS**

[Identify all pending motions]

### RELATED CASES IN THIS JUDICIAL DISTRICT

[Identify all related cases in this Judicial District, including any other cases where a common patent is asserted]

### IPR, CBM, AND OTHER PGR FILINGS

[There are no known IPR, CBM, or other PGR filings.] [Or]
[ALT: IPR2021-00000 was filed on and docketed on An institution decision is
expected on or before A Final Written decision is expected on or before]
NUMBER OF ASSERTED PATENTS AND CLAIMS
Plaintiff has asserted [Num Patents] patent[s] and a total of [Num Claims] claims. The
asserted patent(s) are U.S. Patent Nos

[If a Plaintiff has already served Preliminary Infringement Contentions ("PICs"), note the date of service. Note: Per the Court's Order Governing Proceeding, Plaintiff must serve PICs no later than 7 days before the CMC]

### APPOINTMENT OF TECHNICAL ADVISOR

[Indicate if the Parties request, oppose, or defer to the Court on whether to appoint a technical advisor to the case to assist the Court with claim construction or other technical issues]

### MEET AND CONFER STATUS

Plaintiff and Defendant met and conferred. [The Parties have no pre-Markman issues to raise at the CMC.] or [The Parties identified the following pre-Markman issues to raise at the CMC [list].]

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Dated:	Respectfully Submitted
	/s/

### XIV. <u>APPENDIX C – STANDARD MOTIONS IN LIMINE ORDER</u>

### IN THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS WACO DIVISION



#### ORDER ON MOTIONS IN LIMINE

The Court issues this Order *sua sponte*. To allow for reasonable and relevant *limine* practice as part of the Pretrial Conference, the Court imposes the following set of standard *limine* rulings to be applied mutually to both parties. In addition to these *limine* orders, each party will be permitted to propose and argue (if opposed) up to five (5) of its own motions *in limine* at the Pretrial Conference. *Limine* motions outside these limits will not be considered. *Limine* motions that are multifarious so as to exceed the above limitations will also not be considered. MILs that simply restate the rules of evidence or other legal principles or that are more appropriately motions for summary judgment or *Daubert* motions are improper.

It is therefore **ORDERED** that the Parties, their witnesses, and counsel shall not raise, discuss, or argue the following before the venire panel or the jury without prior leave of the Court:

Court MIL No. 1: The parties shall be precluded from introducing evidence, testimony, or argument regarding pretrial proceedings or issues including but not limited to discovery disputes or dispositive motion practice.

Court MIL No. 2: The parties shall be precluded from introducing evidence, testimony, or argument that raises religious or political beliefs,

race, ethnicity, gender, national origin, sexual orientation, or health (including but not limited to vaccination status) of a party, witness, attorney, or law firm.

- Court MIL No. 3: The parties shall be precluded from introducing evidence, testimony, or argument concerning any party's overall financial size, wealth, or executive compensation.
- Court MIL No. 4: The parties shall be precluded from introducing evidence, testimony, or argument regarding prior art that is not disclosed in a specific combination set forth in any party's expert report or invalidity contentions.
- Court MIL No. 5: The parties shall be precluded from introducing evidence, testimony, or argument before the jury that relates only to equitable defenses or counterclaims (i.e., evidence that does not also serve another evidentiary purpose relevant to jury issues).
- Court MIL No. 6: The parties shall be precluded from introducing evidence, testimony, or argument concerning the Patent Trial and Appeal Board, inter partes review, the Smith-Leahy America Invents Act, or any alternative structure that does not relate directly to an Article III trial in a district court.
- Court MIL No. 7: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that there is anything legally improper in filing a patent application or writing patent claims to cover an adverse party's product.
- Court MIL No. 8: The parties shall be precluded from introducing any argument, evidence, testimony, insinuation, reference, or assertion regarding a witness' choice to testify in his or her native or chosen language (being any language other than English).
- Court MIL No. 9: The parties shall be precluded from introducing evidence, testimony, or argument referring to any other person or entity as "greedy," "corrupt," "evil," or "dishonest," or using any other pejorative term. The parties shall also be precluded from introducing evidence, testimony, or argument that characterizes any other person or entity's actions as "stealing," "copying,"

"misappropriating," "pirating," "trespassing," or any similar terms.

- Court MIL No. 10: The parties shall be precluded from introducing evidence, testimony, or argument bolstering or disparaging the U.S. Patent Office, its examiners, or the process for prosecuting patent applications or granting patents in the United States. This does not preclude factual evidence as to the operations of the USPTO.
- Court MIL No. 11: The parties shall be precluded from introducing evidence, testimony, or argument referring to any other person or entity in disparaging ways, such as a "patent troll," "pirate," "bounty hunter," "bandit," "playing the lawsuit lottery," "shell company," "shakedown artist," "patent assertion entity," or any such similar terms. Use of the term "non-practicing entity" is permitted.
- Court MIL No. 12: The parties shall be precluded from introducing evidence, testimony, or argument regarding funding of the litigation or regarding any comment on attorney-fee compensation including amounts or structure.
- Court MIL No. 13: The parties shall be precluded from introducing evidence, testimony, or argument regarding either party's other litigations or arbitrations, including parallel proceedings in any other court, tribunal, or forum, including ADR proceedings.
- Court MIL No. 14: The parties shall be precluded from introducing evidence, testimony, or argument regarding the size of the parties' law firms or the number of attorneys representing the parties.
- Court MIL No. 15: The parties shall be precluded from introducing evidence, testimony, or argument regarding the fact that testimony or opinions offered by any expert may have been criticized, excluded, or found to be unreliable in any other forum.
- Court MIL No. 16: The parties shall be precluded from introducing evidence, testimony, or argument referring to the role or presence in the courtroom of jury consultants or shadow jurors, or the use of

focus groups or mock proceedings to assist with trial preparation, jury selection, or trial.

- Court MIL No. 17: The parties shall be precluded from introducing evidence, testimony, or argument relating to the Court's Claim Construction Order other than the Court's actual adopted constructions, including the Court's reasoning or the parties' agreements.
- Court MIL No. 18: The parties shall be precluded from introducing evidence, testimony, or argument for purposes of non-infringement comparing the accused product or method to the preferred embodiments, the specification, or any non-accused product or method.
- Court MIL No. 19: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that a verdict in one party's favor would impact the cost of goods or services or would have other commercial impacts.
- Court MIL No. 20: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that the Western District of Texas is an improper or inconvenient venue in which to try this case.
- Court MIL No. 21: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that the other party had an affirmative duty to seek opinion of counsel, and/or any inference that may be drawn as to what the contents of such an opinion would have been.
- Court MIL No. 22: Neither party will ask questions or make statements to invoke a privileged or protected answer, including any materials that are privileged, or that have been presented outside of the jury to establish/prevent a finding of privilege.
- Court MIL No. 23: No expert witness may testify to expert opinions outside the established parameters of her/his expert report, and counsel shall not raise such an objection for strategic or other non-meritorious purposes.

## Exhibit B

### IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS MARSHALL DIVISION

,		§ §	
	Plaintiff,	§ §	
V.		§ §	CIVIL ACTION NO. 2: -CV-00-JRG
,		§ §	
	Defendant.	§ §	

# STANDING ORDER ON MOTIONS IN LIMINE IN CASES ASSIGNED TO CHIEF JUDGE RODNEY GILSTRAP INVOLVING ALLEGATIONS OF PATENT INFRINGEMENT AND/OR BREACH OF FRAND OBLIGATIONS, AS WELL AS DECLARATORY JUDGMENT ACTIONS WHICH RELATE TO THE SAME

The Court imposes the following set of standard *limine* rulings to be applied to all parties. In addition to these *limine* orders, each party will be permitted to propose and argue (if opposed) up to five (5) of each parties' own motions *in limine* at the Pretrial Conference.

#### I. STANDARD LIMINE ORDERS

It is **ORDERED** that the Parties, their witnesses, and counsel shall not raise, discuss, or argue the following before the venire panel or the jury without prior leave of the Court:

Court MIL No. 1: The parties shall be precluded from introducing evidence, testimony, or argument regarding pretrial proceedings or issues including but not limited to discovery disputes, dispositive motion practice, or dropped claims or defenses.

Court MIL No. 2: The parties shall be precluded from introducing evidence, testimony, or argument that raises religious or political beliefs, race, ethnicity, gender, national origin, sexual orientation, or health (including but not limited to vaccination status) of a party, witness, attorney, or law firm.

Court MIL No. 3: The parties shall be precluded from introducing evidence, testimony, or argument concerning any party's overall financial size, wealth, or executive compensation.

- Court MIL No. 4: The parties shall be precluded from introducing evidence, testimony, or argument regarding prior art that is not disclosed in a specific combination set forth in any party's expert report or invalidity contentions.
- Court MIL No. 5: The parties shall be precluded from introducing evidence, testimony, or argument before the jury that relates only to equitable defenses or counterclaims (*i.e.*, evidence that does not also serve another evidentiary purpose relevant to jury issues).
- Court MIL No. 6: The parties shall be precluded from introducing evidence, testimony, or argument concerning the Patent Trial and Appeal Board, inter partes review, the Smith-Leahy America Invents Act, or any alternative structure that does not relate directly to an Article III trial in a district court.
- Court MIL No. 7: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that there is anything legally improper in filing a patent application or writing patent claims to cover an adverse party's product.
- Court MIL No. 8: The parties shall be precluded from introducing any argument, evidence, testimony, insinuation, reference, or assertion regarding a witness' choice to testify in his or her native or chosen language (being any language other than English).
- Court MIL No. 9: The parties shall be precluded from introducing evidence, testimony, or argument referring to any other person or entity as "greedy," "corrupt," "evil," or "dishonest," or using any other pejorative term. The parties shall also be precluded from introducing evidence, testimony, or argument that characterizes any other person or entity's actions as "stealing," "copying," "misappropriating," "pirating," "trespassing," or any similar terms.
- Court MIL No. 10: The parties shall be precluded from introducing evidence, testimony, or argument bolstering or disparaging the U.S. Patent Office, its examiners, or the process for prosecuting patent applications or granting patents in the United States. This does not preclude factual evidence as to the operations of the USPTO.
- Court MIL No. 11: The parties shall be precluded from introducing evidence, testimony, or argument referring to any other person or entity in disparaging ways, such as a "patent troll," "pirate," "bounty hunter," "bandit," "playing the lawsuit lottery," "shell company," "shakedown artist," "patent assertion entity," or any such similar terms. Use of the term "non-practicing entity" is permitted.
- Court MIL No. 12: The parties shall be precluded from introducing evidence, testimony, or argument regarding funding of the litigation or regarding any

comment on attorney-fee compensation including amounts or structure. The parties shall be precluded from introducing evidence, testimony, Court MIL No. 13: or argument regarding either party's other litigations or arbitrations, including parallel proceedings in any other court, tribunal, or forum, including ADR proceedings. The parties shall be precluded from introducing evidence, testimony, Court MIL No. 14: or argument regarding the size of the parties' law firms or the number of attorneys representing the parties. Court MIL No. 15: The parties shall be precluded from introducing evidence, testimony, or argument regarding the fact that testimony or opinions offered by any expert may have been criticized, excluded, or found to be unreliable in any other forum. Court MIL No. 16: The parties shall be precluded from introducing evidence, testimony, or argument referring to the role or presence in the courtroom of jury consultants or shadow jurors, or the use of focus groups or mock proceedings to assist with trial preparation, jury selection, or trial. The parties shall be precluded from introducing evidence, testimony, Court MIL No. 17: or argument relating to the Court's Claim Construction Order other than the Court's actual adopted constructions, including the Court's reasoning or the parties' agreements. Court MIL No. 18: The parties shall be precluded from introducing evidence, testimony, or argument for purposes of non-infringement comparing the accused product or method to the preferred embodiments, the specification, or any non-accused product or method. Court MIL No. 19: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that a verdict in one party's favor would impact the cost of goods or services or would have other commercial impacts. Court MIL No. 20: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that the Eastern District of Texas is an improper or inconvenient venue in which to try this case. Court MIL No. 21: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that the other party had an affirmative duty to seek opinion of counsel, and/or any inference that may be drawn as to what the contents of such an opinion would have been. Court MIL No. 22: Neither party will ask questions or make statements to invoke a privileged or protected answer, including any materials that are

establish/prevent a finding of privilege.

privileged, or that have been presented outside of the jury to

Court MIL No. 23: No expert witness may testify to expert opinions outside the established parameters of her/his expert report, and counsel shall not raise such an objection for strategic or other non-meritorious purposes.

Court MIL No. 24: Neither party shall reference the presence or absence of any party's corporate representative, employee, or other witness.

Court MIL No. 25: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that the opposing party failed to call any witness. The parties shall also be precluded from making any mention or statement of probable testimony of a witness who is absent, unavailable, or will not be called or allowed to testify live or by deposition in this case. In short, neither party shall "try the empty chair."

UNITED STATES DISTRICT JUDGE

So ORDERED and SIGNED this 14th day of December, 2022.

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### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

C.A. No. 22-981-JLH (CONSOLIDATED)

Plaintiff,

**JURY TRIAL DEMANDED** 

v.

NETGEAR, INC.,

Defendant.

DEFENDANT NETGEAR, INC.'S OPPOSITION TO TRACKTHINGS LLC'S MOTION IN LIMINE NO. 1 TO EXCLUDE EVIDENCE, TESTIMONY, OR ARGUMENT REGARDING EITHER PARTY'S OTHER LITIGATIONS OR ARBITRATIONS

### TABLE OF EXHIBITS<sup>1</sup>

Ex. 1	Excerpted Reply Expert Report of Stephen A. Holzen Regarding Damages, dated January August 15, 2024
Ex. 2	Excerpted Rebuttal Expert Report of Douglas Kidder Regarding Damages, dated July 9, 2024
Ex. 3	Defendant's Answer Brief in Opposition to Plaintiff's Motion in Limine No. 1, Sunoco Partners Marketing & Terminals v. Powder Springs Logistics, C.A. No. 17-1390 (LPS-CJB), D.I. 721-13 (D. Del. Nov. 12, 2021)
Ex. 4	Defendant's Opposition to Motion <i>in Limine</i> No. 2, <i>International Business Machines v. Zynga</i> , C.A. No. 22-590-GBW, D.I. 514-1 (D. Del. Sept. 5, 2024)
Ex. 5	Excerpted Pretrial Conference Transcript from W.L. Gore & Assocs. v. C.R. Bard, C.A. No. 11-515-LPS-SJB, D.I. 502 (D. Del. Nov. 25, 2015)
Ex. 6	Touchstream Techs. v. Google, No. 6:21-CV-569-ADA, D.I. 232 (W.D. Tex. July 14, 2023)
Ex. 7	EcoFactor v. Ecobee, No. 6:21-cv-00428-ADA, D.I. 209 (W.D. Tex. June 1, 2023)
Ex. 8	Ravgen v. Lab'y Corp. of Am. Holdings, No. W-20-CV-00969-ADA, D.I. 199 (W.D. Tex. Sept. 13, 2022)
Ex. 9	Excerpted Supplemental Expert Report of Douglas Kidder Regarding Damages, dated May 21, 2025
Ex. 10	Excerpted Supplemental Expert Report of Henry Houh, Ph.D., served May 21, 2025
Ex. 11	Excerpted Transcript from the May 27, 2025 Deposition of Stephen A. Holzen
Ex. 12	Excerpted Second Supplemental Expert Report of Stephen A. Holzen, dated May 9, 2025

<sup>&</sup>lt;sup>1</sup> Full versions of Exs. 1, 2, 9, 10, and 12 can be found at D.I. 248, Exs. 22 and 24, and D.I. 375, Exs. D, F, and J.

The jury verdict that Amazon's mesh WiFi product, eero, does not infringe is directly relevant to the reliability of TrackThings' damages methodology, which assumes no non-infringing mesh WiFi products exist, and its probative value outweighs any risk of prejudice. Fed. R. Evid. 401-403, 702. TrackThings' expert, Mr. Holzen, put the outcome of the *Amazon* case directly at issue by explicitly relying on *Amazon* to support his view that there are no known non-infringing mesh WiFi products on the market to use as benchmarks. (Ex. 1 at ¶ 63 & n.116.) That Mr. Holzen's position has been proven incorrect by the very evidence he cited is highly relevant. Moreover, even after the jury found eero non-infringing, TrackThings' counsel continues to argue in this case that all mesh WiFi products infringe. TrackThings and its expert should not be allowed to present an inaccurate assessment of the mesh WiFi market to the jury; NETGEAR should be permitted to use the *Amazon* verdict to counter TrackThings' false narrative.

### A. The Amazon Verdict Is Directly Relevant to the Damages Theory in This Case

Contrary to TrackThings' assertion, Mr. Holzen explicitly relied on *Amazon* to form his opinion that there are no non-infringing mesh products available on the market. NETGEAR's damages expert rebutted Mr. Holzen's selection of <u>range extender</u> products as benchmarks for NETGEAR's <u>mesh</u> products by noting that eero, another <u>mesh</u> product, is a better benchmark. (Ex. 2 at ¶¶ 219-20; Ex. 9 at § 6.3.2.) In reply, Mr. Holzen insisted that

" (Ex. 1 at  $\P$  63.) His opinion that eero infringes is based entirely on allegations in the *Amazon* complaint, and ignores the jury's contrary conclusion.

Mr. Holzen could have corrected his position and addressed the *Amazon* verdict in his March or May 2025 supplemental reports but chose not to. Instead, he served new opinions that only further put the *Amazon* verdict at issue. (*See* Ex. 9 at § 6.3.2 & Ex. 10 at ¶ 25 (NETGEAR experts explaining relevance of *Amazon* verdict to Holzen's new opinions).) TrackThings' counsel

also could have conformed its arguments to acknowledge the *Amazon* verdict, but instead continue to insist that Mr. Holzen "employed an acceptable benchmark product analysis" because "competitor *mesh* products that do not include the claimed improvements" "do not appear to exist[.]" (D.I. 265 at 1, 8.) TrackThings continues to argue that all mesh products infringe, even in the face of a contrary jury finding. (Ex. 11 at 335:1-8.)

In light of the *Amazon* verdict, if Mr. Holzen is permitted to provide an opinion that is based on a supposed absence of non-infringing mesh products on the market, NETGEAR must be permitted to introduce evidence showing that Amazon's eero <u>is</u> a non-infringing mesh product on the market. Additionally, NETGEAR should be allowed to cross-examine Mr. Holzen using the *Amazon* verdict since Mr. Holzen justified his benchmark opinions based on the *Amazon* case and further cited to *Amazon* to justify his royalty rate calculations in his Second Supplemental Report. (Ex. 12 at ¶ 17.) As TrackThings admits, if Mr. Holzen is allowed to testify, questions about Mr. Holzen's methodology, including his selection of benchmark products, are an appropriate "issue for cross examination." (D.I. 265 at 8-9.) Such evidence rebutting an expert's core assumption is admissible. *See, e.g., Johns Hopkins Univ. v. Alcon Lab'ys*, 2018 WL 4178159, at \*7 (D. Del. Aug. 30, 2018); *Impax Lab'ys v. Lannett Holdings*, 2016 WL 9240617, at \*1 (D. Del. Aug. 24, 2016).

### B. The Probative Value Outweighs Any Danger of Prejudice or Confusion

TrackThings argues that evidence related to *Amazon* is irrelevant and highly prejudicial because eero's non-infringement has "nothing to do with whether the N[ETGEAR] products . . . infringe the Asserted Patent." Pl. MIL No. 1 at 2. That argument misses the point. NETGEAR will not rely on the *Amazon* verdict to support its non-infringement position. Instead, *Amazon* is directly relevant to the credibility of TrackThings' damages expert and his theory's reliability.

Because NETGEAR will not rely on the *Amazon* verdict in connection with non-infringement, TrackThings' cited cases are inapposite. Pl. MIL No. 1 at 1-2 (discussing *Sunoco*,

(Ex. 3 at 1), *IBM*, (Ex. 4 at 1), *W.L. Gore*, (Ex. 5 at 113:25-114:11) (precluding such evidence "[t]o the extent it goes to willfulness" but allowing the parties to raise the issue to the extent evidence is relevant to damages)). Unlike in *Helios* where the Court found that the expert did *not* rely on assumption of infringement of the other product, *Helios Software v. Spectorsoft*, 2015 WL 3653098, at \*1 (D. Del. May 22, 2015), here, TrackThings' expert relies directly on whether a non-infringing mesh product exists, a question answered by the finding of non-infringement in *Amazon*. *Cf. Oil-Dri Corp. of Am. v. Nestle Purina PetCare*, 2019 WL 1098925, at \*6 (N.D. Ill. Mar. 8, 2019) ("NP makes no effort at all to explain [the relevance].").

TrackThings further relies on out-of-district standing orders to argue that there is not "any sort of carve out for litigation involving an overlap in patents." Pl. MIL No. 1 at 3. But they are not controlling, and both Judge Albright and Judge Gilstrap in those districts have allowed evidence of prior litigation when relevance was established. *See, e.g.*, (Ex. 6 at 3); *Intell. Ventures II v. FedEx*, 2018 WL 10638138, at \*6 (E.D. Tex. Apr. 26, 2018); (Ex. 7 at 3); (Ex. 8 at 4); *Hillman Grp. v. KeyMe*, 2021 WL 1248180, at \*4 (E.D. Tex. Mar. 30, 2021). Because NETGEAR has established that the *Amazon* case is highly relevant to Mr. Holzen's methodology, this evidence should be admitted. Fed. R. Evid. 401-403, 702.

The risk of prejudice and confusion to the jury is minimal. As TrackThings admitted, "none of N[ETGEAR]'s experts have opined that eero's infringement or non-infringement of the Asserted Patent is at all relevant to whether the N[ETGEAR] products infringe." Pl. MIL No. 1 at 2. Nothing suggests that any witness or attorney will insinuate that eero's non-infringement in *Amazon* proves non-infringement here. Thus, the probative value of the evidence outweighs any danger, and NETGEAR respectfully requests the Court deny TrackThings' motion *in limine* No. 1.

Dated: June 13, 2025 Respectfully submitted,

/s/ James L. Higgins

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# EXHIBIT 1

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	)
Plaintiff,	)
V.	) C.A. No. 1:22-cv-00981-JLH
NETGEAR, INC.	)
Defendant.	) )

### REPLY EXPERT REPORT OF STEPHEN A. HOLZEN

Stephen A. Holzen August 15, 2024

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57. Finally, Mr. Kidder states that the

Although Mr. Kidder does not draw any further conclusion with respect to this point, I again note that I appropriately relied upon the data produced by NETGEAR in this Matter for the full period made available—to the extent that additional data is produced, I reserve the right to incorporate it as part of my analysis.

### E. Mischaracterizes My Benchmark Product Analysis

58. Mr. Kidder asserts that my "choice of benchmark products is fatally flawed and unsupportable in light of Dr. Bims' descriptions of the technical improvements attributable to the patented technologies." Mr. Kidder further claims that my "attribution rate analysis is predicated on an implicit assumption that the Patents-In-Suit are required to offer mesh technology – not that the Patents-In-Suit offer an improved mesh technology as he claims to understand.... [H]is asserted price premium is related to the price premium attributed to mesh technology (among other product differences)." Mr. Kidder also asserts that "according to Dr. Bims, the relevant benchmarks would be non-infringing mesh networks – not range extenders. In particular, Dr. Holzen [sic] is claiming that all the difference in price between the accused products and the benchmarks is due to the patents when we know that range extenders do not include basic mesh technology." Mr. Kidder further states that "Mr. Holzen provides no basis for why the third-party products he identifies from web searches are the most appropriate – e.g. that they are the biggest selling or they are the most comparable on all features except the patented features." 105

<sup>&</sup>lt;sup>97</sup> Kidder Report, p. 56.

<sup>98</sup> Kidder Report, p. 56.

<sup>&</sup>lt;sup>99</sup> Calculated as (Affirmative Holzen Exhibit 11.7).

<sup>100</sup> Calculated as (Affirmative Holzen Exhibit 11.7).

<sup>&</sup>lt;sup>101</sup> Kidder Report, p. 56.

<sup>&</sup>lt;sup>102</sup> Kidder Report, p. 50.

<sup>&</sup>lt;sup>103</sup> Kidder Report, p. 62.

<sup>104</sup> Kidder Report, p. 64.

<sup>105</sup> Kidder Report, p. 61.

- However, as explained in the Affirmative Holzen Report, my profit sharing allocation is calculated by multiplying the operating profit from the Adjusted SSPPU by "the relative premium that customers are willing to pay to purchase the Accused Products." I further explained that "I arrived at the relative premium that customers are willing to pay to purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products." As cited in the underlying exhibits to the Affirmative Holzen Report, I relied on Dr. Bims for the comparative technical analysis with respect to these products. In fact, I understand from Dr. Bims that "the selected benchmark products used in this analysis are comparable to the selected Accused Products but for the inclusion of the accused mesh functionality." Therefore, Mr. Kidder's assertion that my analysis is contrary to Dr. Bims' analysis in this Matter is erroneous and misplaced.
- 60. Mr. Kidder similarly claims that I make "no effort to determine the source of any price differential. Differences in brand, technological specifications, customer service, product positioning, reputation and software are all factors that likely explain some or all of the price premium."<sup>110</sup>
- 61. In response, I first note Mr. Kidder does not highlight any other technological specification differences as part of my benchmark product analysis. Therefore, it appears that Mr. Kidder does not dispute that the products analyzed on Affirmative Holzen Report Exhibits 4.1 and 4.3 and are technically comparable for the purposes of analyzing the relative premium that customers are willing to pay to purchase the Accused Products.

62. Moreover, with respect to the other alleged differences listed by Mr. Kidder, I note that my comparable benchmark product analysis includes a comparable, non-mesh NETGEAR

<sup>&</sup>lt;sup>106</sup> Affirmative Holzen Report, p. 53.

<sup>&</sup>lt;sup>107</sup> Affirmative Holzen Report, p. 53.

<sup>&</sup>lt;sup>108</sup> Affirmative Holzen Report, Exhibits 4.1, 4.3, and 4.4.

<sup>109</sup> Affirmative Holzen Report, pp. 53-54.

<sup>&</sup>lt;sup>110</sup> Kidder Report, p. 65.

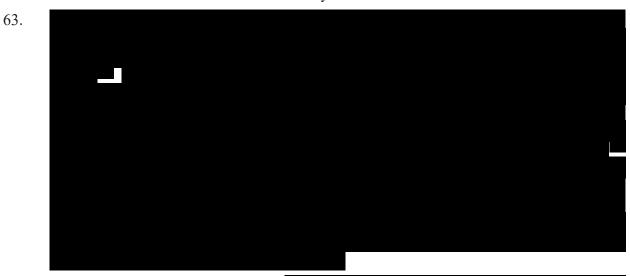
<sup>&</sup>lt;sup>111</sup> Kidder Report, p. 65.

<sup>&</sup>lt;sup>112</sup> Affirmative Holzen Report, Exhibit 4.4.

<sup>&</sup>lt;sup>113</sup> Affirmative Holzen Report, Exhibit 4.4.

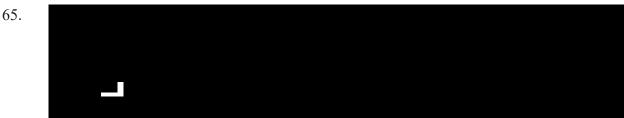
product. 114 In addition, certain of the third-party benchmark products,

.<sup>115</sup> It is therefore appropriate to consider these products when determining comparable products to the selected Accused Products but for the inclusion of the accused mesh functionality.



### 64. Furthermore, Mr. Kidder claims that

products used as part of my analysis are non-mesh products, they are unsuitable for purposes of a benchmark products analysis. First, as cited in the underlying exhibits to the Affirmative Holzen Report, I relied on Dr. Bims for the comparative technical analysis with respect to these products. In fact, I understand from Dr. Bims that "the selected benchmark products used in this analysis are comparable to the selected Accused Products but for the inclusion of the accused mesh functionality."



<sup>&</sup>lt;sup>114</sup> Affirmative Holzen Report, Exhibit 4.3.

Affirmative Holzen Report, p. 53. See also Affirmative Holzen Report, Exhibits 4.2, 4.5, and 4.6.

<sup>&</sup>lt;sup>116</sup> First Amended Complaint for Patent Infringement, *TrackThings LLC v. Amazon.com Services LLC and eero LLC*, C.A. No. 6:23-cv-00133-ADA, July 20, 2023.

<sup>&</sup>lt;sup>117</sup> Kidder Report, pp. 60-62.

<sup>&</sup>lt;sup>118</sup> Kidder Report, p. 61.

Affirmative Holzen Report, Exhibits 4.1, 4.3, and 4.4.

<sup>&</sup>lt;sup>120</sup> Affirmative Holzen Report, pp. 53-54.

<sup>&</sup>lt;sup>121</sup> Kidder Report, p. 43.



67. First, I understand based upon my discussions with Dr. Bims that the technical benefits provided by the Patents-in-Suit are comparable for both Orbi and Nighthawk NETGEAR products.



69.

<sup>122</sup> Kidder Report, pp. 59-60.

<sup>123</sup> Kidder Report, p. 60.

<sup>124</sup> Kidder Report, p. 60.

<sup>125</sup> Reply Exhibit 12.0.

<sup>126</sup> Interviews with Dr. Bims.

<sup>127</sup> Reply Exhibit 12.0.

<sup>128</sup> Kidder Report, p. 50.

<sup>129</sup> Kidder Report, p. 66.

<sup>130</sup> Kidder Report, p. 66.

# EXHIBIT 2

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS, LLC.,		§	
	Plaintiff,	§ §	
NETGEAR, INC.,		§ 8	C.A. No. 1:22-cv-00981-JLH
	Defendant	§ §	C.A. No. 1.22-CV-00781-JLII
		§	
		8	
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### EXPERT REPORT OF DOUGLAS KIDDER REGARDING DAMAGES

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However, in patent litigation, experts and courts often miss the salient differences between running royalties and lump sum royalties and imply that it is straightforward to translate between the two. One way this is done is by dividing a lump sum royalty by the number of units actually produced. While this is appealing, it is wrong. Equally wrong is the assertion that the lump sum is equal to the present value of forecasted running royalty payments.

. . .

The court's decision in Lucent provided a very astute observation that a running royalty gives the licensee an option to stop using the patented invention. When signing a license based on a running royalty, the licensee not only obtains the right to use the patented invention but also obtains an option to stop paying the royalty in the future by stopping all use in the future. Signing a lump sum license requires the licensee to give up this option—this is one of the risks alluded to in Lucent. The lump sum payment that would be acceptable to the licensee is one that would recognize the value of the foregone option.

. . .

Real options are generally difficult to value and the value of the portfolio of interdependent real options available to a potential licensee is even more difficult.<sup>225</sup>

214. Unless Mr. Holzen plans to offer an opinion as to the value of the portfolio of real options (a very complex task), his opinion as to the equivalent amount of a lump sum based on his proffered running royalty rate will be wrong.

#### **6.5** ATTRIBUTION RATE

215. Mr. Holzen describes his "attribution rate" as:



216. Mr. Holzen's calculation of the attribution rate of is not rooted in the evidence and facts in this case. TrackThings has accused hundreds of NETGEAR products.<sup>227</sup> Mr. Holzen's attribution

<sup>&</sup>lt;sup>225</sup> Kidder, D., O'Brien, V., Holzwarth, J., Chau, J., "Lump Sums, Running Royalties and Real Options", les Nouvelles, December 2015.

<sup>&</sup>lt;sup>226</sup> Holzen Report, ¶182.

<sup>&</sup>lt;sup>227</sup> See, e.g., Holzen Report, Exhibit 12.1.

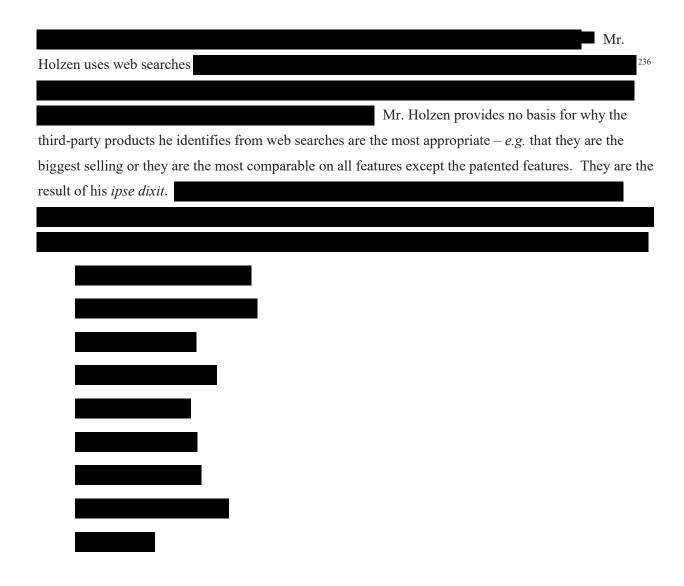
rate is based on an arbitrary selection 219. Mr. Holzen's selection of third-party products for all of the benchmarks is also contrary to the evidence in this case. Mr. Holzen characterizes his selection of third-party products as However, three of the third-party products <sup>228</sup> Holzen Report, Exhibits 4.1, 4.3, 4.4.

<sup>&</sup>lt;sup>229</sup> Holzen Report, Exhibits 4.1, 4.3, 4.4.

<sup>&</sup>lt;sup>230</sup> Holzen Report, Exhibit 4.3.

<sup>&</sup>lt;sup>231</sup> Exhibit DGK-6:

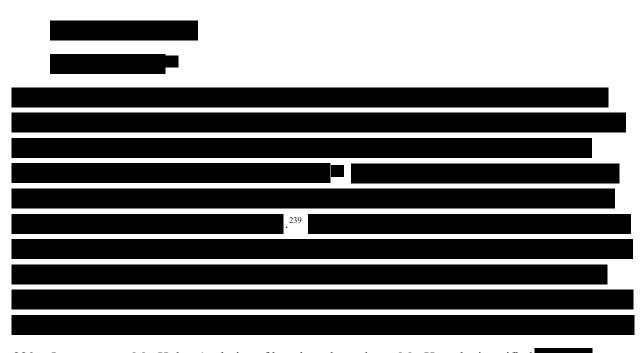
<sup>&</sup>lt;sup>234</sup> Holzen Report, ¶182.



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NETGEAR-TRACK-011212; NETGEAR-TRACK-011213; NETGEAR-TRACK-011214; NETGEAR-TRACK-011215; NETGEAR-TRACK-011216; NETGEAR-TRACK-011217; NETGEAR-TRACK-011218; NETGEAR-TRACK-011219; NETGEAR-TRACK-011220; NETGEAR-TRACK-011221; NETGEAR-TRACK-011222; NETGEAR-TRACK-011223; NETGEAR-TRACK-011224; NETGEAR-TRACK-011225; NETGEAR-TRACK-011226; NETGEAR-TRACK-011227; NETGEARTRACK-011228; NETGEAR-TRACK-011229.

NETGEAR-TRACK-011212; NETGEAR-TRACK-011213; NETGEAR-TRACK-011214; NETGEAR-TRACK-011215; NETGEAR-TRACK-011216; NETGEAR-TRACK-011217; NETGEAR-TRACK-011218; NETGEAR-TRACK-011219; NETGEAR-TRACK-011220; NETGEAR-TRACK-011221; NETGEAR-TRACK-011222; NETGEAR-TRACK-011223; NETGEAR-TRACK-011224; NETGEAR-TRACK-011225; NETGEAR-TRACK-011226; NETGEAR-TRACK-011227; NETGEAR-TRACK-011228; NETGEAR-TRACK-011229; https://amzn.to/3UEgGQs; https://amzn.to/3uI1uqW; https://amzn.to/42D7Nss; https://amzn.to/49f7hDq; https://amzn.to/49zk17L; https://amzn.to/3UGmiKi; https://amzn.to/4bCEREZ; https://amzn.to/49c1Zc4; https://amzn.to/3OH1deO; https://bit.ly/3UKzMVr; https://bit.ly/49w2duc; https://bit.ly/3PQAXVB; https://www.ign.com/articles/best-wifi-extender; https://bit.ly/3TE6BlD; https://ampedwireless.com/specialoffers/rec33a.html; https://www.netgear.com/images/datasheet/orbit.https://www.todaair.com/td-4g-1mw-v3-1/; https://www.netgear.com/media/SRS60\_tcm148-60067.pdf; https://bit.ly/3IHCZxO.



220. In contrast to Mr. Holzen's choice of benchmark products, Mr. Harpalani testified

240

221. Mr. Holzen's attribution rate analysis is predicated on an implicit assumption that the Patents-In-Suit are required to offer mesh technology – not that the Patents-In-Suit offer an improved mesh technology as he claims to understand. As just discussed,

Thus, his asserted price premium is related to the price premium attributed to mesh technology (among other product differences). However, the Complaint states only that each of the three Patents-In-Suit covers "specific improvements in mesh networking technology..." Nowhere does the Complaint claim that the Patents-In-Suit cover the concept of mesh technology. In fact, Mr. Holzen's descriptions of the

<sup>&</sup>lt;sup>237</sup> NETGEAR-TRACK-011218.

<sup>&</sup>lt;sup>238</sup> NETGEAR-TRACK-011218.

<sup>&</sup>lt;sup>239</sup> NETGEAR-TRACK-011218.

<sup>&</sup>lt;sup>240</sup> Deposition of Sandeep Harpalani, November 28, 2023 at 14:7 – 11.

<sup>&</sup>lt;sup>241</sup> Complaint,  $\P$ **2**2 – 24.

benefits of the patented technology do not claim that the Patents-In-Suit are necessary to provide mesh networking functionality. He states:

> I understand that the Patents-in-Suit generally relate to the enablement of a flexible and dynamic mesh WiFi network system. Based upon my discussions with Dr. Bims, I understand that the Patents-in-Suit cover three features, including the routing of user data using different software radios ('442 Patent), intelligent node placement ('017 Patent), and dynamic network reconfiguration ('893 Patent).242

The '442 Patent and the '017 Patents generally relate to a wireless network, and more specifically to an ad-hoc wireless network.<sup>243</sup>

I understand that the '017 Patent relates to improved placement of new nodes into a network to help improve link integrity and the performance and coverage of the system.<sup>244</sup>

I understand from Dr. Bims that the '442 Patent generally describes flexible wireless mesh networking technology.<sup>245</sup>

### 222. Dr. Bims further states that the patented technologies represent improvements to mesh networking:

Early proposed mesh solutions were incomplete. For example, questions remained as to the management of the configuration of the relays, how to place new relays into the network, and how to connect the relays together and efficiently establish pathways for data packets to traverse the mesh network.

The Patents-in-Suit address these key aspects. The '017 patent teaches and claims a "computational unit" distributed within the relays for measuring link integrity and directing the placement of new relays to improve performance. The '442 patent teaches and claims novel relays having multiple software radios or transceivers and configured to create specific data pathway backhauls to increase bandwidth. And the '893 patent teaches and claims relays with bidirectional communication channels arranged in dynamic, reroutable topologies, to improve efficiency while retaining robustness. <sup>246</sup>

The claims of the '017 Patent cover specific improvements for wireless mesh networks...<sup>247</sup>

. . .

<sup>&</sup>lt;sup>242</sup> Holzen Report, ¶67.

<sup>&</sup>lt;sup>243</sup> Holzen Report, ¶68.

<sup>&</sup>lt;sup>244</sup> Holzen Report, ¶70.

<sup>&</sup>lt;sup>245</sup> Holzen Report, ¶¶71 & 147.

<sup>&</sup>lt;sup>246</sup> Bims Report Regarding Infringement, January 25, 2024, ¶¶41 – 42.

<sup>&</sup>lt;sup>247</sup> Bims Report Regarding Infringement, January 25, 2024, ¶45. Emphasis added.

The claims of the '442 Patent cover specific *improvements* for wireless mesh networks...<sup>248</sup>

. . .

The claims of the '893 Patent covers specific *improvements* for an intelligent network...<sup>249</sup>

223. Dr. Bims also describes the shortcoming of range extenders that were solved by mesh networks:

One solution to help expand the range of a wireless network is to run Ethernet cables from a router to hardwire-connect additional routers. But this approach makes adding and moving relays difficult because extensive cabling is required.

Another solution is to use WiFi mesh network devices, including range extenders. But this approach also tends to suffer from multiple drawbacks. First, many range extenders are deployed as individual access points that are bridged together, causing delays as packets hop from bridge to bridge, rather than seamlessly integrated into a single wireless mesh network. Second, traditional range extenders generally waste at least half of their data bandwidth for backhaul links that communicate back to the original Wi-Fi network over the same channel frequency that is used for communication with client devices. Therefore, while an extender may widen coverage, it does so at the cost of reduced bandwidth efficiency. Defendant's own website confirms known problems using range extenders when compared to Mesh Systems. For example, the Netgear website states that benefits of mesh WiFi systems as opposed to range extenders include ease of setup due to the use of preconfigured Satellites, faster speeds due in part to better communication between nodes, increased reliability due to the self-healing nature of mesh networks, and a reduction in dead zones due to the ability to add nodes. ...

Wi-Fi "mesh" technology is an attempt to overcome several drawbacks of traditional wireless routers and range extenders (or repeaters).<sup>250</sup>

224. As a result, Mr. Holzen's selection of benchmark products that presumably do not practice the patented technologies is deeply flawed and contrary to Dr. Bims' opinions. Mr. Holzen compares the prices of accused mesh units with the prices of range extenders to calculate the percent of the ASP attributable to the patented technology. Yet, according to Dr. Bims, the relevant benchmarks would be non-infringing mesh networks – not range extenders. In particular, Dr. Holzen is claiming that all the difference in price between the accused products and the benchmarks is due to the patents when we know that range extenders do not include basic mesh technology. As mesh systems include a router and range extenders do not, mesh systems are, on average, more expensive regardless of whether they infringe the patents at issue in this case. For example,

<sup>&</sup>lt;sup>248</sup> Bims Report Regarding Infringement, January 25, 2024, ¶57. Emphasis added.

<sup>&</sup>lt;sup>249</sup> Bims Report Regarding Infringement, January 25, 2024, ¶67. Emphasis added.

<sup>&</sup>lt;sup>250</sup> Bims Report Regarding Infringement, January 25, 2024, ¶37 – 39.

251
225. As an analogy, imagine one had patented an improvement to the mouse trap. Ideally, one would
compare the price of the improved mouse trap to other mouse traps to calculate the value of the patented
technology. Mr. Holzen has not done this. Instead, he has compared an allegedly-improved mouse trap
to other ways of catching mice, i.e. having a cat. The difference in price between having a cat and having
an improved mouse trap is not the value of the patented technology. Mr. Holzen uses the fact that his
non-infringing alternatives have similar specifications to imply that his non-infringing alternatives are an
appropriate comparison. Going back to the mouse trap analogy, even if the cat and the improved mouse
trap kill the same number of mice in a month, the difference in price between the two is not the value of
the patented technology. Mr. Holzen's comparison includes both the difference in value of having a cat
and having any mouse trap and the value of the improved mouse trap.
226. Even if Mr. Holzen's calculation was a measure of any price premium, it is clearly a flaw to
attribute all of the price premium to the patented technologies. He makes no effort to determine the
source of any price differential. Differences in brand, technological specifications, customer service,
product positioning, reputation and software are all factors that likely explain some or all of the price
premium. <sup>252</sup> For example, the features Mr.Holzen highlights in his Exhibit 4.4 do not match across the
three products he has chosen.
227. In summary, the Court should disregard Mr. Holzen's attribution analysis.

<sup>&</sup>lt;sup>251</sup> Exhibit DGK-7: Average Selling Prices.

<sup>&</sup>lt;sup>252</sup> I note that Mr. Harpalani testified that "Deposition of Sandeep Harpalani, November 28, 2023 at 47:17-18.

Finally, he simply asserts without any basis that his asserted price premium is due solely to the patented technologies.

### 6.6 ALLOCATION TO THE THREE PATENTS-IN-SUIT



	Exhibit	Relates to Patents	Total Survey Responses	Total Attribution to Patents
	5.1			
	5.2			
	5.3			
	5.4			
	5.5			
230.				

.255

 $<sup>^{253}</sup>$  Holzen Report, Exhibits 5.0 - 5.5.

<sup>254</sup> 

 $<sup>^{255}</sup>$  Holzen Report, Exhibits 5.1 - 5.5, Note [2].

### 7. SIGNATURE PAGE

- 248. I certify that, to the best of my knowledge and belief:
  - The statements of fact in this report are true and correct.
  - The reported analyses, opinions and conclusions are limited only by the reported assumptions and are my personal, unbiased and professional analyses, opinions and conclusions.
  - I have no personal interest or bias with respect to the parties involved.
  - My compensation is not contingent on an action or event resulting from the analyses, conclusions or opinions of this report.

Douglas G. Kidder

July 9, 2024

# EXHIBIT 3

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

SUNOCO PARTNERS MARKETING & TERMINALS L.P.

Plaintiff,

v.

C.A. No. 17-1390 (LPS-CJB)

POWDER SPRINGS LOGISTICS, LLC and MAGELLAN MIDSTREAM PARTNERS, L.P.

Defendants.

EXHIBIT 13(B): DEFENDANTS' ANSWERING BRIEF IN OPPOSITION TO PLAINTIFF'S MOTION *IN LIMINE* NO. 1 TO EXCLUDE ANY ARGUMENT OR EVIDENCE RELATING TO NON-FINAL *INTER PARTES* REVIEW PROCEEDINGS

The PTAB's Final Written Decisions (FWDs)—finding all claims of the '948 and '548 patents unpatentable—are relevant, probative, and non-prejudicial. Sunoco asserts that the patent examiner's allowance of the patents-in-suit over certain prior art entitles it to greater deference on validity. The FWDs, however, directly rebut this argument. These decisions demonstrate that the very same prior art that Sunoco touts as having been overcome in the initial examination has—under closer inspection by the USPTO—been found to invalidate all claims of the '948 and '548 patents. The Court should thus permit them.

### I. ARGUMENT

The Court should allow Defendants to introduce into evidence the FWDs, as they are part of the very PTO record Sunoco wants to *partially* introduce to support its validity arguments, and are necessary to paint the full picture regarding the validity of the '948 and '548 patents. Here, Defendants seek to invalidate the '948 and '548 patents, and the FWDs are probative evidence that the PTAB mistakenly allowed the patents. For that reason, the Court should admit them.

Further, the FWDs directly rebut Sunoco's assertion that heightened deference should apply to the original examiner's findings. Sunoco's validity argument rests heavily on assertions that the USPTO's original examination of the patents considered certain prior art references and still allowed the patents-in-suit. For example, Sunoco's expert, Dr. Kytomaa, repeatedly relies on the examiner's consideration of certain prior art references to bolster his validity claim, stating that "refinery blending systems for the production of gasoline, including Bajek, were considered by the examiner during the prosecution of the asserted patents, and the claims of the asserted patents were granted over these prior art refinery references." (Ex. 1, ¶ 432; see also id., ¶¶ 517, 598 (referring to examiner's consideration of Stanton and Chin). Likewise, Sunoco proposes a jury instruction that seeks to give heightened deference based on the original examinations, stating that Defendants' "burden [to invalidate] may be more difficult to meet

when the accused infringer attempts to rely on prior art that was before the Patent Examiner during prosecution." (Ex. 2, Prop. Inst. 5.2.2.). Because the FWDs directly call the analysis and allowance of the examiner into question, and in fact state affirmatively that the examiner was *wrong*, these decisions are highly probative of the validity issues and the appropriate weight of Sunoco's assertions relating to the examination process.

Sunoco has not shown any unfair prejudice or confusion that substantially outweighs the probative value of the FWDs. First, the FWDs are final, and even Sunoco acknowledges that "final determinations by the PTO must be considered, particularly when the challenge in the reexamination proceeding was based on the same prior art as is at issue in the litigation."

\*Volterra Semiconductor Corp. v. Primarion, Inc., No. C-08-05129 JCS, 2011 WL 4079223, at \*6 (N.D. Cal. Sept. 12, 2011). The cases cited by Sunoco involving intermediary PTO decisions are thus inapposite. See Callaway Golf Co. v. Acushnet Co., 576 F.3d 1331, 1342 (Fed. Cir. 2009); Interdigital Commc'ns Inc. v. Nokia Corp., No. CV 13-10-RGA, 2014 WL 8104167, at \*1 (D. Del. Sept. 19, 2014); Amphenol T & M Antennas, Inc. v. Centurion Int'l, Inc., No. 00 C

<sup>&</sup>lt;sup>1</sup> That the FWDs are on appeal does not change the analysis. Indeed, under Sunoco's logic, the PTO's original examination allowing the patents—which is subject to further review by the PTO and the Courts—should also be excluded. But even if the FWDs are not considered fully final, they are nonetheless relevant to key issues in the case and should be admitted. The cases Sunoco cites excluding PTO reexaminations under Fed. R. Evid. 403 are limited to their facts. *Personalized User Model, L.L.P. v. Google Inc.*, No. 09-525, 2014 WL 807736, at \*3 (D. Del. Feb. 27, 2014); *SRI Int'l Inc. v. Internet Sec. Sys., Inc.*, 647 F. Supp. 2d 323, 356 (D. Del. 2009). Here, particularly because Sunoco intends to rely on the examiner's original findings based on the same prior art that the PTAB relied on in the FWDs, any prejudice or confusion does not substantially outweigh the probative value of the FWDs in this case.

<sup>&</sup>lt;sup>2</sup> Indeed, in *Callaway*, the Federal Circuit recognized that plaintiff's statements "had potential to mislead the jury by implying that every expert examiner to have considered the patents had concluded that they were valid." 576 F.3d at 1342. The Court still found no error in the district court's exclusion of non-final reexamination proceedings because defendants did not object to the plaintiff's argument as unfairly prejudicial. *Id.* Here, Defendants do object on that ground, and the only way to cure that prejudice is to admit the FWDs.

4298, 2002 WL 32373639, at \*2 (N.D. Ill. Jan. 17, 2002).<sup>3</sup> Second, with respect to the different standards in the IPR proceedings, if necessary, jury instructions can eliminate any potential prejudice complained of by Sunoco. *See StoneEagle Servs., Inc. v. Pay—Plus Solutions, Inc.*, No. 8:13–CV–2240–T–33MAP, 2015 WL 3824208, at \*8-\*9 (M.D. Fla. June 19, 2015); *Universal Elecs., Inc. v. Universal Remote Control, Inc.*, No. SACV 12–00329 AG, 2014 WL 8096334, at \*7 (C.D. Cal. Apr. 21, 2014); *Oracle America, Inc. v. Google, Inc.*, Civ. No. 10–03561, 2012 WL 1189898, at \*3 (N.D. Cal. Jan. 4, 2012).

Finally, excluding the FWDs would severely prejudice Defendants. The FWDs are a part of the *complete* file history of the '948 and '548 patents, just like the original examiner's findings, so they should be considered together. Fed. R. Evid. 106. Presenting the jury with only the original examiner's findings, and not the FWDs, would result in a distorted and prejudicial impression that the PTO has only held the patents to be valid, when in fact the PTO's final determination is that the patents are invalid. That is particularly true given Sunoco's belaboring of the original examiner's (faulty) examination and the presumption of validity of the patents. *See Oracle America, Inc. v. Google, Inc.*, No. 10-03561, 2012 WL 1189898, at \*3 (N.D. Cal. Jan. 4, 2012) ("[I]t would be misleading to instruct the jury on presumption of validity while concealing from the jury the fact that the rationale for presumption—PTO examiner expertise—has been drawn into question by more recent [examinations]."). Unlike any potential confusion from introducing the FWDs, there is no way to cure the prejudice to Defendants *without* introducing the FWDs. The Court should thus deny Sunoco's motion.

<sup>&</sup>lt;sup>3</sup> Siemens Mobility, Inc. v. Westinghouse Air Brake Techs. Corp., is inapposite because it dealt with whether PTO proceedings are binding on the Court, not whether they should be admitted for consideration by the jury. No. 16-284, 2019 WL 3240521, at \*7 (D. Del. July 18, 2019).

## MORRIS, NICHOLS, ARSHT & TUNNELL LLP

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# EXHIBIT 4

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

INTERNATIONAL	BUSINESS	<b>MACHINES</b>
CORPORATION.		

Plaintiff,

Civil Action No. 22-590-GBW

v.

FILE UNDER SEAL

ZYNGA INC.,

Defendant.

**DEFENDANT ZYNGA'S OPPOSITION TO IBM'S MOTION IN LIMINE #2** 

IBM's motion seeks to exclude evidence concerning (1) prior dispositive decisions, (2) prior *Markman* decisions, and (3) arguments related to those decisions. It should be denied.

(1) IBM argues that the Court "should exclude summary judgment orders from prior cases because [they] involved different accused products." Mot. at 1. Zynga's expert only cites to one summary judgment decision to support his opinions: *Chewy I*. After Zynga's expert submitted his report, the Federal Circuit affirmed *Chewy I* in relevant part, and the parties' experts served supplemental reports to address that holding. *See Chewy, Inc. v. Int'l Bus. Machs. Corp.*, 94 F.4th 1354 (Fed. Cir. 2024) ("*Chewy II*"). Zynga agrees to refer only to the two *Chewy* decisions, which were addressed by both experts and are relevant to infringement, as they explain what does and does not fall within the scope of the claims. *Chewy I* also provides context for *Chewy II*.

IBM's experts, on the other hand, cite numerous prior dispositive decisions to support their opinions. For example, IBM's infringement expert includes in his opening report an entire section entitled "Related Proceedings in District Court," which walks through prior decisions beyond *Chewy I* and *Chewy II*. Ex. 1 (Thompson Op.) ¶¶ 164-176. IBM's validity expert also walks through various decisions and opines that they support his positions—e.g., that certain claim elements were "inventive" and the claims are "patentable." Ex. 2 (Jeffay Reb.) ¶¶ 71-72, 1524, 1528-30. And both of IBM's experts suggest that decisions from prior post-grant patent office proceedings should at least bolster validity of the asserted patents. *See* Zynga's MIL No. 3. To the extent the Court precludes any mention of dispositive decisions, it should do so for both parties and also preclude any mention of decisions from post-grant patent office proceedings.

Moreover, in prior cases, IBM has attempted to rely on past jury verdict(s) to support its case. Such references are improper under FRE 403 on their own, but to the extent the Court determines all *summary judgment* decisions are inadmissible, so too are prior jury verdicts.

(2) IBM also argues that "[p]revious *Markman* decisions . . . are similarly irrelevant here because this Court issued its own *Markman* order that the jury must apply in this case." Mot. at 1.<sup>1</sup> Zynga does not dispute that the Court's *Markman* order governs; however, the Court did not construe *every* claim term. For the non-construed terms, Zynga's experts offer opinions with respect to the "plain and ordinary" meaning and then, for certain terms, explain why those opinions are "consistent with" prior *Markman* orders. *See, e.g.*, Ex. 3 (Almeroth Reb.) ¶¶ 548, 564-565. Referring to constructions from prior cases merely to show that an expert's understanding of the "plain and ordinary" meaning is correct would assist the jury.

It is IBM's validity expert who takes citing prior *Markman* orders a step too far by arguing, for example, that Zynga failed to meet its burden of proof for invalidity because its experts did not "address" or "grapple with" constructions from prior cases. *See, e.g.*, Ex. 2 ¶¶ 431, 561, 852, 887, 1162, 1262 n.1279, 1400, 1476. To the extent the Court precludes any mention of prior *Markman* orders, it should do so for both parties.

(3) IBM's past statements with respect to, for example, the scope and meaning of the asserted patents are highly relevant and probative of the issues in this case. The '849 patent has an extensive litigation history, and IBM's motion effectively asks this Court to wipe the slate clean and allow IBM to freely contradict itself. The Court should not sanction such behavior. For example, as mentioned in Zynga's *O2 Micro* letter brief (D.I. 467), the parties dispute whether the claimed "structuring" steps in the '849 patent must occur before the claimed "applications" or "advertising" are transmitted to the user reception system. D.I. 467 at 2-4. While IBM now argues that the "structuring" steps may occur *whenever*, IBM argued in a prior case that "structuring"

<sup>&</sup>lt;sup>1</sup> IBM's position is at odds with its opposition to Zynga's pending motion for judgment on the pleadings (D.I. 168), where IBM attempted to argue claims of the '849 patent were patent eligible by adopting a claim construction from a different case (D.I. 186 at 6).

before sending was a key advance over the prior art: "[S]tructuring applications 'so that they may be presented' (i.e., structuring before sending for presenting [sic] through the network)..." Id. at 4 (emphasis in original) (citing D.I. 468, Ex. 9 (2/18/22 IBM's Opp. to Chewy's MSJ)). If the Court does not resolve the parties' dispute via Zynga's O2 Micro motion, Zynga should be allowed to present IBM's past statements for impeachment and to show that IBM's position is inconsistent.

Moreover, contrary to IBM's suggestion, Zynga is not seeking to "avoid the Court's *Markman* order for the term 'application' in this case" by relying "on an argument made by IBM on that term in a different case." Mot. at 3. Again, Zynga does not dispute that the Court's *Markman* order governs. But IBM's past statement that "[e]verybody knows what an application is today" is highly probative because it is a party statement with respect to the same disputed claim term of the same patent (the '849 patent). Ex. 4 (08/29/2016 *Markman* Hr'g Tr.) at 30:19-31:17. Indeed, IBM made this statement to argue that the claim term was not indefinite and that the court in that case should adopt a construction of "application" *verbatim* to what the Court adopted here—Zynga's use of the prior statement is thus perfectly consistent with the Court's *Markman* order.

In American Axle & Manufacturing, Inc. v. Neapco Holdings LLC, plaintiff argued, like IBM, that the "parties' briefings" are inadmissible because they "require the parties 'to explain the procedural, factual, and legal underpinnings of the parties' briefing." No. 15-1168-GBW, 2024 WL 125186, at \*1 (D. Del. Jan. 11, 2024). Defendants, like Zynga, argued that they should be able to "rely on Plaintiff's own arguments" because "Plaintiff . . . made prior admissions about what the claims require." Id. This Court agreed with defendants, finding that "Plaintiff's statements in a prior proceeding may be admissible," and that it would not be unduly prejudicial, "if Defendants introduce those statements to show that Plaintiff's position at trial is inconsistent." Id. The Court should allow Zynga the same opportunity.

Dated: August 9, 2024

Respectfully submitted,

### **FARNAN LLP**

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# EXHIBIT 5

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1	IN THE UNITED STATES DISTRICT COURT
2	IN AND FOR THE DISTRICT OF DELAWARE
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4	W.L. GORE & ASSOCIATES, INC., : CIVIL ACTION NO. :
5	Plaintiff, : v :
6	: C.R. BARD, INC. and BARD PERIPHERAL :
7	VASCULAR, INC., : 11-515-LPS-CJB
8	Defendants
9	Wilmington, Delaware Wednesday, November 25, 2015 Pretrial Conference
10	riethar conference
11	
12	BEFORE: HONORABLE <b>LEONARD P. STARK,</b> Chief Judge
13	APPEARANCES:
14	YOUNG CONAWAY STARGATT & TAYLOR, LLC
15	BY: PILAR G. KRAMAN, ESQ.
16	and
17	FAEGRE BAKER DANIELS, LLP BY: JAMES W. PORADEK, ESQ.,
18	KEVIN P. WAGNER, ESQ., LAUREN J. FRANK, ESQ.,
19	TIMOTHY M. SULLIVAN, ESQ., and LINZEY A. ERICKSON, ESQ.
20	(Minneapolis, Minnesota)
21	Counsel for W.L. Gore & Associates, Inc.
22	MORRIS NICHOLS ARSHT & TUNNELL, LLP
23	BY: JACK B. BLUMENFELD, ESQ., and MICHAEL J. FLYNN, ESQ.
24	and
25	Brian P. Gaffigan Registered Merit Reporter

1	APPEARANCES: (Continued)
2	
3	KIRKLAND & ELLIS, LLP BY: STEVEN CHERNY, ESQ. (New York, New York)
4	and
5	
6	KIRKLAND & ELLIS, LLP  BY: EDWARD C. DONOVAN, ESQ., and  MICHAEL J. PEARSON, ESQ.
7	(Washington, District of Columbia)
8	and
9	KIRKLAND & ELLIS, LLP BY: AMANDA J. HOLLIS, ESQ.
10	(Chicago, Illinois)
11	and
12	WOLF, GREENFIELD & SACKS, P.C.
13	BY: JOHN L. STRAND, ESQ. (Boston, Massachusetts)
14	Counsel for C.R. Bard, Inc. and
15	Bard Peripheral Vascular, Inc.
16	
17	
18	- 000 -
19	PROCEEDINGS
20	(REPORTER'S NOTE: The following pretrial
21	conference was held in open court, beginning at 8:34 a.m.)
22	THE COURT: Good morning, everyone.
23	(The attorneys respond, "Good morning, Your
24	Honor.")
25	THE COURT: I'll have you put your appearances

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I do want to hear brief argument on the two remaining motions in limine. The first one is Gore's, so whoever is arguing the Gore Motion in Limine No. 1 for standing may come to the podium, please.

(Ms. Erickson comes to the podium.)

THE COURT: Good morning.

MR. ERICKSON: Good morning, Your Honor. I'll be addressing Gore's Motion in Limine No. 1.

With this motion, Gore is seeking to exclude evidence of two previous litigations, the Bard v Gore litigation and the Gore v Medtronic litigation as well as the previous order from this Court granting Bard's motion for summary judgment of noninfringement related to the '285 patent.

The premise of our motion, Your Honor, is pretty simple. That these cases involve different asserted patents and in the case of the two prior litigations also different accused products that created fundamentally different infringement and validity issues than those are going to be at trial in our case.

In addition, there is obvious prejudice concerns as well. And just as one example, as many courts, including this court have found, admitting evidence of previous litigation including previous orders creates a substantial likelihood that the jury in our case is going to rely on

some of those previous determinations or defer to those determinations in making the decisions that are going to be before them. And with respect, that concern is particularly concerning here with respect to the '285 motion that you granted for summary judgment of noninfringement.

So if that evidence were to come into trial, that was a patent that was involved in this litigation, asserted against the same two products, you issued an order saying they don't, Bard does not infringe those patents, that patent in particular, and the likelihood that a jury here in the '892 would defer to that creates a substantial prejudice.

THE COURT: On the Bard v Gore litigation, if I understand the defendants' argument, it is that that was a predicate ultimately for a license, a license that both sides' damages experts are going to be talking about. Are those factual premises accurate?

MR. ERICKSON: So the Bard v Gore litigation related to the Goldfarb patent, that is correct. Both damages experts have opinions on licenses related to the Goldfarb patent but not related to the compulsory license that resulted from the Bard v Gore, and I don't know if that came out in the briefing clearly so I wanted to make that clear.

The compulsory license that resulted from that

litigation is not relied on by either, any experts in this court. Bard is now saying for the first time, in response to our motion in limine, that two other licenses that Gore's expert, damages expert is relying on in this case, one between Bard and Endologix and one between Bard and Atrium are somehow based on the terms that are in, that came from that compulsory license in Bard v Gore, and that link simply hasn't, there is no opinions in this case making that link between the compulsory license from Bard v Gore between those two parties and the licenses that are being relied on in this case.

THE COURT: So if we granted your motion and excluded references to Bard v Gore, both experts would still be able to give the full scope of the opinions they disclosed previously in their reports and in depositions. Is that right?

MR. ERICKSON: Absolutely, Your Honor. All the experts in this case, including related to the licenses and related to the comparability of the licenses, have not relied on the details or the ultimate determination of willful infringement in that case, so that they would fully be able to give their opinions regardless of whether or not the details of the Bard v Gore case comes in.

Then with respect to the '285 patent, Your Honor, Bard tries to make or Bard makes two arguments as to

where that order is relevant. The first relates to willful infringement. And, obviously, Your Honor, that order came out in 2015, so to the extent it is relevant to willful infringement, it would only be relevant to the objective prong of willful infringement which we believe is an issue for the judge to decide post-trial and so it wouldn't be relevant to the jury trial in any event.

But the summary judgment order that came down on noninfringement was based on claim construction argument that they had made with respect to the '285 patent that ultimately wasn't even accepted, and in the summary judgment order from Judge Burke, he basically recognizes that Bard's counsel at that summary judgment hearing admitted that that claim construction argument that provided their noninfringement argument on the '285 patent did not equally apply to the '892. So we would submit that that order is not relevant to willful infringement in any event.

And the other reason that they are saying that order specifically is relevant to our case is because they want to be able to bring evidence of our damages expert not apportioning her damages opinion between whether one patent was in the case and whether two patents were in the case.

And I just want to briefly show you. She actually sent --

THE COURT: That is all right. We don't need to

1 go into that. 2 What about Gore v Medtronic? 3 MR. ERICKSON: Yes. In our opinion, Your Honor, that litigation is not relevant. Bard makes two arguments a 4 5 to why the Medtronic litigation is relevant. One, they bring up inventor testimony from that 6 7 case related to enablement and written description. Since 8 the parties did the briefing on this motion in limine, Judge 9 Burke has issued an R&R recommending granting the motion of 10 no invalidity on both of those bases. So if Your Honor were 11 to overrule Bard's objections on that motion, it wouldn't be relevant to our trial in any event. 12 But even if it was relevant and you found it 13 14 relevant to a particular issue and admissible, that testimony could come in without the details of the entire Medtronic 15 litigation and the determination of noninfringement in that 16 17 case being relevant or admissible in this case. 18 THE COURT: All right. Thank you. I have to 19 move on. 20 Let me give the defendants a chance to be heard 21 on this one. Thank you. 22

MR. CHERNEY: Your Honor, may it please the Court. By the way, I have this up here because I have a quote up here. (Referring to small computer.)

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24

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Okay. I will start with Bard v Gore.

First of all, as you have seen recently, there is this whole thing about the Criado report. They're injecting the Goldfarb patent into this case and talking about it to show that it is comparable.

One of the things that we think is important to be able to cross-examine certainly and to point out to the jury is the many statements by the Court, both the District of Arizona and the Federal Circuit, about the nature of the Goldfarb patent. They're going to have Criado go up there and talk about the Goldfarb patent is comparable to the '892 patent.

I can read a quote right hear from the District of Arizona where they said: Indeed, the Goldfarb patent was an important industry achievement which some 30 years later still remains the gold standard for vascular grafts. And both Bard and Gore have enjoyed substantial commercial success. Blah blah blah.

There are many, many quotes like that from both the District Court and the Federal Circuit court. It is not fair for them to keep -- they're injecting the Goldfarb patent into this. We're not. But they can't inject the Goldfarb patent into this and not let us examine witnesses based on the statements and also their own statements during that litigation about the Goldfarb patent.

THE COURT: Okay. But even if that much were

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true, why does the jury have to hear that there was prior litigation, the details that it was Bard and Gore, or the outcome? MR. CHERNEY: Well, two things. First of all, it has the prior litigation because these are statements from the Court about it. THE COURT: But why do they need to hear more than just --MR. CHERNEY: Let's get to the licenses, which you just brought up, Your Honor. I apologize. THE COURT: That's okay. MR. CHERNEY: I can see it's been a long day, Your Honor. I apologize. As for the licenses, what happened here, they're being very, very clever. The Atrium and Endologix they pointed to were from cases they filed in the same District just after the Goldfarb, Gore/Bard case resolved. After that case resolved, there was no injunction entered and the Court there entered a compulsory license going forward. Immediately thereafter, the Atrium and Endologix defendants settled for the exactly the same terms. It seems as if I should be able to ask Ms. Stamm, their damages expert, when she is up there proffering these licenses, they very carefully cherry-picked and said we're only relying the

Atrium and Endologix licenses, and not on the resolution in

1 Goldfarb.

So it seems pretty unfair for me to not be able to go to Ms. Stamm and say, wait a second, you are relying on Atrium and Endologix licenses that came out of litigation in Arizona and are identical to the exact -- to the resolution that the District of Arizona gave as a compulsory license.

THE COURT: Let me ask you a few questions. Do you need, in order to do what you think is fair, do you need to tell the jury that this prior litigation was Bard and Gore?

MR. CHERNEY: I think so because it's Goldfarb in the sense of I don't know how else you do it. Because Gore is making statements about the Goldfarb patent in the Bard/Gore case.

THE COURT: Let me stop you there. Do you need also to tell this jury that that case, if I understand correctly, culminated in a jury trial?

MR. CHERNEY: I don't know I need to say it happened to be a jury trial. What I do need to be able to say is the licenses they're pointing to, how they arose, I'm not pointing to those licenses. I'm not pointing to Goldfarb. They're pointing to Goldfarb.

THE COURT: Do you need to be able to tell this jury that there was a finding in your client's favor in that case?

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MR. CHERNEY: I think the answer is yes because, I tell you, I actually do have personal knowledge of this. When Atrium and Endologix was resolved immediately after the resolution in Arizona in the same court, it really was a result of the District Court of Arizona finding that the largest participant in the market, Gore, was a wilful infringer and entered a compulsory license. The reason they ended up -- and I should be able to test this with Ms. Stamm. The reason they ended up agreeing to the exact same terms as Gore got ordered to was because there was a finding in the same court that Gore, the largest participant in the market, has been found to be a willful infringer. How do I not say that? THE COURT: Let me stop up. Do you need to be able to tell this jury, I believe this is correct, that that finding was affirmed on appeal by the Federal Circuit? MR. CHERNEY: Not if they're not contesting it, obviously. If they're willing to acknowledge. Because I don't know if it was affirmed at the time. Was it affirmed? I don't think it was affirmed at the time of Atrium and Endologix were assigned. They were assigned as a result, again, they were the follow on in Arizona. THE COURT: And do you need anything from the Bard v Gore litigation for any purpose other than damages?

MR. CHERNEY: No.

1 THE COURT: So if we were to bifurcate damages, 2 you don't need any reference to Bard v Gore. 3 MR. CHERNEY: Correct, because the two reasons are the Criado comparability which is only being relied on 4 5 by Stamm for damages as well as the licenses. THE COURT: What about the '285 patent, our 6 7 finding? Why should that go to the jury. 8 MR. CHERNEY: It's exactly as -- I'm sorry, I 9 didn't catch your name -- as my respected opposing counsel 10 said. MR. PORADEK: Ms. Erickson. 11 12 MR. WAGNER: Ms. Erickson. I apologize. And if you allow me one indulgence. This is 13 14 from the Stamm report. There are many pages like it. And 15 you see at the top, she points to the patented technologies 16 are critical to the manufacture and marketing of such a 17 device. 18 She is talking about both the '285 and the '892. All through her report, she weaves them 19 20 together. Not only does she not apportion them, which is 21 absolutely necessary under LaserDynamics, so when she is up there now offering the exact same percentage, I understand 22 23 she has a theory because they're allegedly both fundamental, 24 that she doesn't have to apportion. 25 THE COURT: Do you need anything more than to be

able to say previously, Ms. Stamm, weren't there two patents that you were considering and now there is one. Do you need anything more than that?

MR. CHERNEY: I am putting aside the willfulness issue, which I do think goes to subjective in the sense that they accused us of subjective willfulness on both, and it turns out that we had good faith as to one at the same time, but obviously the Court can address that.

I apologize. Let me think about that for the moment.

Certainly in terms of damages. I think it is also critical to lost profits in terms of design-arounds. So, for example, at the time she was saying you could not make a successful product without both. It's all throughout her report. Now, she only is going to say, she is going to be up there, and I'm going to say, wait a second, didn't you say it was impossible to do without both? Do I need to say there was summary judgment, noninfringement? No. Do I need to say it is noninfringing? I guess I need to be able to say that.

THE COURT: All right. And then finally, Gore v Medtronic. What possible relevance does that have?

MR. CHERNEY: The same inventor testified, not just about enablement and written description. They testified about the conception of the .1 thickness.

thereafter.

So that's what we spent most the morning on.

Let me give you my rulings on the two motions in limine that were argued.

First, we have Gore's Motion in Limine No. 1 which was to exclude certain evidence and argument relating to three aspects of prior litigation or prior court orders.

This motion is granted in part and denied in part.

With respect to the Bard v Gore evidence, that evidence, it goes solely to damages issues and therefore the motion is denied but without prejudice to renew again in connection with the damages trial when we get there.

With respect to the Gore v Medtronic information, I'm granting the motion with respect to that, but if there is some specific testimony from an inventor that Bard wants to use and believes is relevant for a specific purpose at this forthcoming jury trial, you will need to give notice to the other side and ask for leave to do so, and I'll make that decision in the specific context of the trial and almost certainly will look more favorably on it if there is no request to say it's from a trial that Gore is involved in and lost. So I will make a concrete decision in response to any concrete request.

With respect to the '285 patent, to the extent

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that is believed to be relevant to damages issues, that issue can be renewed in connection with the damages trial when we get there.

To the extent it goes to willfulness, I'm granting the plaintiff's motion and excluding reference to the Court's ruling on the '285 patent. There, while there is arguably some probative value to it, the risk of unfair prejudice substantially outweighs that probative value. I don't want this jury to come close to hearing that this Court has already made a decision on a related patent in the context of this case. So that's the Gore motion.

On Bard's Motion in Limine No. 2.

MR. WAGNER: Your Honor, may I ask for one point of clarification?

THE COURT: Let me finish first.

MR. WAGNER: Okay.

THE COURT: On the other motion, which is Bard's Motion in Limine No. 2, which is to preclude Gore from introducing evidence or argument concerning Bard's employment of Mr. Martin or Dr. Martin, this motion is denied.

There is at least some minimal probative value relating to copying which is a secondary consideration of nonobviousness. And while there is a risk of unfair prejudice to the defendants, I don't think it substantially

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1	MR. PORADEK: No, Your Honor.
2	THE COURT: On Monday okay?
3	MR. PORADEK: Monday would be fine.
4	THE COURT: Monday 6:00 p.m., Mr. Blumenfeld.
5	MR. BLUMENFELD: Great. Thank you, Your Honor.
6	THE COURT: Is there anything else?
7	MR. DONOVAN: No, Your Honor. Thank you.
8	THE COURT: Well, I do hope you all get to enjoy
9	the holiday at least a little bit, and we'll look for your
10	submissions on Monday. Safe travels, and we'll see you very
11	soon.
12	(Pretrial conference ends at 12:02 p.m.)
13	
14	I hereby certify the foregoing is a true and accurate transcript from my stenographic notes in the proceeding.
15	
16	<u>/s/ Brian P. Gaffigan</u> Official Court Reporter
17	U.S. District Court
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23 24	
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# EXHIBIT 6

### IN THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS WACO DIVISION

TOUCHSTREAM TECHNOLOGIES, INC.,	§	
	§	
Plaintiff,	§	
	§	
V.	§	Civil Case No. 6:21-cv-569-ADA
	§	
GOOGLE LLC,	§	JURY TRIAL DEMANDED
	§	
Defendant.	§	
	§	

### **ORDERS ON MOTIONS IN LIMINE**

The Court, having considered the Motions in Limine filed by Plaintiff Touchstream

Technologies, Inc. ("Touchstream") and Defendant Google LLC. ("Google") (Dkt. Nos. 174, 185)

and the parties' arguments at the June 28, 2023 Pretrial Conference, rules as follows:

### **Touchstream Technologies, Inc.'s Motions in Limine:**

No.	Touchstream's Motion in Limine	The Court's Order
1	To Exclude SMR Agreement And Related Opinions And Testimony	DENIED.
2	To Exclude Evidence And Testimony Regarding Usage Spreadsheets	DENIED.
3	To Exclude Evidence And Testimony Regarding Cherry- Picked Google License Agreements	DENIED.
4	To Exclude Inter Partes Review (IPRs) and PTAB Proceedings	GRANTED. But, parties are allowed to use testimony to impeach any witness who testified during IPR, as long as testimony is referenced in trial as sworn testimony. Further, the Court will consider IPR evidence in its consideration of willfulness after trial. <i>See</i> PTC Tr. at 136:10-22.
5	To Exclude Argument that Touchstream is an Non-Practicing Entity or "Patent Troll."	DENIED. But will exclude if either side uses corporate status as prerogative. <i>See</i> PTC Tr. at 137:2-18.

No.	Touchstream's Motion in Limine	The Court's Order
6	To Exclude Testimony or Declarations from Mr. Levai.	DENIED.
7	To Exclude Arguments or Evidence of Touchstream's Alleged Delay in Filing Suit	DEFFERED. Approach bench before getting into that issue/content. <i>See</i> PTC Tr. at 138:18-139:1.
8	To Exclude Arguments or Evidence of Touchstream's Not Offering a Physical Product	DENIED. Parties are still allowed to object if references are used in a prejudicial way. <i>See</i> PTC Tr. at 140:1-142:9.
9	To Exclude Arguments of Legally Erroneous Non-Infringing Alternatives	DENIED.
10	To Exclude Evidence and Testimony Related to Prior Art References That Google Failed to Disclose in it Final Invalidity Contentions and for Which Google Cannot Provide Adequate Foundation.	DENIED.

### Google LLC's Motions in Limine:

No.	Google's Motion in Limine	The Court's Order
1	Exclude reference to Google's overall size, wealth, profits, or revenue	DENIED, but will exclude if either side uses corporate status as prerogative. <i>See</i> PTC Tr. at 137:2-18.
2	Exclude the unsupported opinion of Mr. Chandler concerning ad revenue and Google's business model	DENIED.
3	Exclude reference that any Touchstream product practiced the Asserted Patents and any alleged industry praise, including the untimely and unqualified opinion of Mr. Strober that Touchstream products embodied the patents	GRANTED.
4	Exclude reference to non-US use, activity, or sale revenue	моот.

No.	Google's Motion in Limine	The Court's Order
5	Exclude any reference, suggestion, or argument regarding the fact, settlement, outcome of or verdict or result in any other litigation, legal proceeding, regulatory, governmental, or other investigation involving the other party	GRANTED, except expert discussion of other litigation. <i>See</i> PTC Tr. at 150:16-151:4.
6	Exclude any reference of Google being a "monopoly," "monopolist," "anti-competitive" or other such pejorative terms, or that Google is repeatedly accused of IP infringement, does not respect IP rights, or other such matters	GRANTED, except to the discussion in expert reports. <i>See</i> PTC Tr. at 151:6-18; 153:10-23.
7	Exclude any reference concerning Google's practices with respect to data collection, privacy, or information security	GRANTED, except to the extent any expert needs to prove infringement. <i>See</i> PTC Tr. at 151:19-152:3.
8	Exclude any reference about alleged deficiencies in or the conduct of discovery in this case	GRANTED.
9	Exclude any reference relating to data retention policy and practices	GRANTED. See PTC Tr. at 152:8-153:3.

**SIGNED** this 14th day of July, 2023.

ALAN D ALBRIGHT UNITED STATES DISTRICT JUDGE

# UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS WACO DIVISION

ECOFACTOR, INC.,

Plaintiff,

V.

JURY TRIAL DEMANDED

ECOBEE, INC.,

Defendant.

ECOFACTOR, INC.,

Plaintiff,

V.

Case No. 6:21-cv-00428-ADA

JURY TRIAL DEMANDED

LEAD CASE

ECOBEE, INC.,

Defendant.

### ORDER REGARDING MOTIONS IN LIMINE

The Court, having considered the Motions *in Limine* filed by Plaintiff EcoFactor, Inc. ("EcoFactor") and Defendant ecobee, Inc. ("ecobee") (Dkt. Nos. 124, 127, 153) and the parties' arguments at the May 11, 2023 Pretrial Conference, rules as follows:

<u>Motion</u>	Ruling
ecobee's Motion in Limine No. 1: Given that EcoFactor Will Present Multiple Infringement Experts, the Court Should Preclude It from Providing Cumulative and Duplicative Testimony (Dkt. No. 124)	Denied.
ecobee's Motion in Limine No. 2: EcoFactor Should Not Be Permitted to	, i

<u>Motion</u>	Ruling
Send ecobee's Source Code Printouts to the Jury (Dkt. No. 124)	printouts specifically discussed during the trial.
ecobee's Motion in Limine No. 3: EcoFactor May Not Present Evidence or Argue that It Practices Any of the Asserted Patents (Dkt. No. 124)	Denied. However, if Defendant believes that Plaintiff attempts to put in evidence on this issue that was not disclosed in discovery, then Defendant can approach and request exclusion.
ecobee's Motion in Limine No. 4: The Court Should Exclude Evidence and Argument that ecobee's Knowledge of EcoFactor's Existence or Product Offerings Equates to Notice or Knowledge of the Asserted Patents (Dkt. No. 124)	Granted.
ecobee's Motion in Limine No. 5: The Court Should Exclude Evidence or Argument that the DSJ Agreements Contain an Agreement to a \$5.16 Royalty (Dkt. No. 124)	Denied.
ecobee's Motion in Limine No. 6: The Court Should Exclude Speculative Evidence Concerning Daikin, Schneider, and JCI's Contractual Intent That is Beyond Any Witness's Personal Knowledge (Dkt. No. 124)	Granted. No fact witness should talk about anything that is beyond that person's knowledge.
ecobee's Motion in Limine No. 8: EcoFactor May Not Present Evidence of the Outcome of the Google Trial, Including the Verdict or Damages Award (Dkt. No. 124)	Granted.
ecobee's Motion in Limine No. 9: The Court Should Exclude References to Generac's Acquisition of ecobee and the Acquisition Price (Dkt. No. 124)	Defendant shall notify Plaintiff by the start of trial whether Defendant wants to introduce evidence about operating losses. If so, Plaintiff can address the Generac acquisition and acquisition price. If not, Plaintiff cannot introdude evidence of the Generac acquisition or price.

<u>Motion</u>	<u>Ruling</u>
ecobee's Motion in Limine No. 10: EcoFactor May Not Rely on Documents It Produced for the First Time in Connection with Its Pre-trial Disclosures (Dkt. No. 124)	Denied.
EcoFactor's Motion in Limine No. 1: To preclude references to litigation involving EcoFactor and ecobee other than EcoFactor's claims against ecobee at issue in this trial, and to preclude references to EcoFactor's litigation matters against other parties except for those settled by licenses (Dkt. No. 127)	Tentatively granted. Nothing about other litigation unless Plaintiff opens the door. Plaintiff can object on the basis that they did not open the door.
EcoFactor's Motion in Limine No. 2: To preclude evidence or argument regarding inter partes reviews, ex parte reexaminations, or other post-grant proceedings (Dkt. No. 127)	Granted.
EcoFactor's Motion in Limine No. 3: The parties shall not offer evidence or argument regarding no-longer asserted patents, dropped patent claims, non-asserted infringement theories, no-longer asserted non-infringement theories, and no-longer asserted invalidity theories (Dkt. No. 127)	Granted.
EcoFactor's Motion in Limine No. 4: To preclude evidence or argument regarding prior art not elected by ecobee for trial, including evidence or argument about how any such non-asserted prior art indicates that a claim element was known in the prior art (Dkt. No. 127)	Granted
EcoFactor's Motion in Limine No. 5: To preclude fact witnesses from offering expert evidence construing claim language or comparing it to ecobee products, EcoFactor products, or prior art (Dkt. No. 127)	Granted solely with respect to fact witnesses offering claim construction opinions.

<u>Motion</u>	Ruling
EcoFactor's Motion in Limine No. 6: To preclude evidence or argument regarding comparisons of accused products to prior art (Dkt. No. 127)	Granted.
EcoFactor's Motion <i>in Limine</i> No. 7: To preclude evidence or argument regarding equitable defenses not being decided by the jury (Dkt. No. 127)	Mooted by the following stipulation: The parties shall be precluded from introducing evidence, testimony, or argument before the jury that relates only to equitable defenses or counterclaims (i.e., evidence that does not also serve another evidentiary purpose relevant to jury issues).
EcoFactor's Motion in Limine No. 8: To preclude evidence or argument that is derogatory of the USPTO or its examiners, such as that they are mistake-prone or prone to error (Dkt. No. 127)	Mooted by the following stipulation: The parties shall be precluded from introducing evidence, testimony, or argument bolstering or disparaging the U.S. Patent Office, its examiners, or the process for prosecuting patent applications or granting patents in the United States. This does not preclude factual evidence as to the operations of the USPTO.
EcoFactor's Motion in Limine No. 9: To preclude evidence or argument that if the jury were to award EcoFactor the damages that it is seeking, this would increase the price of ecobee's products, put ecobee's manufacturers or partners out of business, or lead to lost jobs (Dkt. No. 127)	Granted. See PTC Tr. at 138:17-139:2.
EcoFactor's Motion in Limine No. 10: To preclude evidence or argument regarding EcoFactor's attorney fee agreements or payments to EcoFactor's litigation counsel, Russ August & Kabat (Dkt. No. 127)	Mooted by the following stipulation: The parties shall be precluded from introducing evidence, testimony, or argument regarding funding of the litigation or regarding any comment on attorney-fee compensation including amounts or structure
EcoFactor's Motion <i>in Limine</i> No. 11: To preclude evidence or argument regarding how often a party's experts have worked	Denied.

<u>Motion</u>	Ruling
with the party's counsel outside the context of this action (Dkt. No. 127)	
EcoFactor's Motion in Limine No. 12: To preclude references to EcoFactor as "litigious," "troll," "pirate," "profiteer," "extortionist," "shell-company," "engaging in a shakedown," "in the business of filing lawsuits," "stick up," "hold up," or like terms (Dkt. No. 127)	There should be nothing derogatory said about either party.
EcoFactor's Motion <i>in Limine</i> No. 13: To preclude reliance upon ecobee's own patents and physical SMART thermostat, which threaten juror confusion and were untimely disclosed (Dkt. No. 153)	Withdrawn as to ecobee's own physical prior art SMART thermostat.  Granted solely as to introducing ecobee's own patents into evidence.

**SIGNED** this 1st day of June, 2023.

ALAN D ALBRIGHT UNITED STATES DISTRICT JUDGE

### IN THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS WACO DIVISION

RAVGEN, INC.,

Plaintiff,

Case No. 6:20-cv-00969-ADA

v.

LABORATORY CORPORATION OF AMERICA HOLDINGS,

Defendant.

### ORDER CONCERNING FINAL PRETRIAL CONFERENCE MOTIONS

Before the Court are Ravgen, Inc.'s ("Ravgen") and Laboratory Corporation of America Holdings' ("Labcorp") motions for summary judgment, *Daubert* motions, and the parties' respective motions *in limine*. The Court held a Final Pretrial Conference concerning these motions on August 31, 2022. During that hearing, the Court heard oral arguments and provided oral rulings on each of the motions. The Court now enters those rulings.

### Motions for Summary Judgement and Daubert motions

Ravgen's Motions	Ruling
Motion For Summary Judgment Of No	GRANTED.
Anticipation By Lee, Holodniy, And Landes	
(Dkts. 117, 138, 156)	The disclosures of acid citrate dextrose
	(ACD) in the references Lee (Ex. 3 to
	Ravgen's Motion), Holodniy (Ex. 4 to
	Ravgen's Motion), and Landes (Ex. 5 to
	Ravgen's Motion) do not disclose the claimed
	"agent that [inhibits lysis of cells/impedes cell
	lysis], if cells are present, [and] wherein said
	agent is selected from the group consisting of
	membrane stabilizer, cross-linker, and cell
	lysis inhibitor" in the Patents-in-Suit as a
	matter of law.

Motion To Exclude And Preclude Certain Expert Testimony Of Drs. Paul T. Spellman And Larry J. Dumont (Dkts. 120, 140, 159)	GRANTED-IN-PART.  Drs. Dumont and Spellman are excluded from providing any testimony or opinions regarding the priority dates of the Patents-in-Suit.  Drs. Dumont and Spellman are excluded from providing any testimony or opinions: (1) that any of Labcorp's asserted reference combinations of Lee and Ryan, Lo (1999) and Ryan, and Lo (1999) and Granger disclose the claim limitation "determining the sequence of a locus of interest"; or (2) concerning claim 67.
Motion To Strike And Exclude Labcorp's Fed. R. Civ. P. 26(a)(2)(C) Disclosure (Dkts. 122, 141, 158)	GRANTED.
Motion To Exclude, In Part, The Expert Opinion Of Dr. Stephen D. Prowse (Dkts. 123, 142, 161)	GRANTED.  Dr. Prowse is excluded from providing any testimony or opinion that is based on the testimony of Mr. Sapeta. Dr. Prowse is further excluded from providing any testimony or opinions that the smallest saleable patent practicing unit is a blood collection tube.

Labcorp's Motions	Ruling
Motion For Summary Judgment Of Invalidity	DENIED.
Under Indefiniteness, Or In The Alternative,	
Non-Infringement (Dkts. 110, 145, 155)	
Motion To Exclude Certain Infringement	GRANTED.
Opinions Of Dr. Brian Van Ness (Dkts. 111,	
112, 132, 143)	Dr. Van Ness is excluded from testifying
	about his opinions contained in ¶¶ 611-626,
	672-686 of his opening report. Dr. Van Ness
	is further excluded from offering any opinions
	that Labcorp's act of selling or offering for
	sale the accused products constitutes
	infringement of the asserted method claims of
	the Patents-in-Suit.

Motion To Exclude Opinions Of Paul K.	DENIED.
Meyer (Dkts. 113, 114, 133, 144)	

### Motions in Limine

Ravgen's Motions in Limine	Ruling
Motion <i>in Limine</i> No. 1 to preclude any	GRANTED-IN-PART.
argument or evidence regarding other	
potential licensing or litigation targets.	Labcorp shall notify the Court in advance of
	offering evidence related to this motion and
	obtain the Court's ruling on that evidence
	before presenting it to the jury.
Motion <i>in Limine</i> No. 2 to preclude any	GRANTED.
argument, evidence, testimony, or reference	
regarding LabCorp's (including Sequenom's	
or Genzyme's) patents whether owned or	
licensed, to argue that LabCorp does not	
infringe, that the patents-in-suit are invalid, or	
as a defense to willful infringement.	
Motion <i>in Limine</i> No. 3 to preclude any	GRANTED.
argument, evidence, testimony, or reference	
regarding theories of non-infringing	
alternatives not disclosed during fact	
discovery.	
Motion <i>in Limine</i> No. 4 to preclude any	GRANTED-IN-PART.
argument, evidence, testimony, or reference	
regarding LabCorp's (including Sequenom's	Witnesses may testify to facts and evidence
or Genzyme's) investigation of or the	on which discovery was provided.
formation of a good faith belief of non-	
infringement or invalidity.	
Motion <i>in Limine</i> No. 5 to preclude any	GRANTED-IN-PART.
argument, evidence, testimony, or reference	
that Ravgen is equitably estopped from	Labcorp is permitted to introduce facts
asserting claims of patent infringement	concerning the parties' pre-suit
against LabCorp.	communications and the history between the
	parties.
Motion in Limine No. 6 to preclude any fact	GRANTED.
witness testimony opining on non-	
infringement or invalidity.	
Motion in Limine No. 7 to preclude any	GRANTED.
argument, evidence, testimony, or reference	
in support of LabCorp's additional agent non-	
infringement theory, which is based on an	

Ravgen's Motions in Limine	Ruling
incorrect legal standard and was not timely	
disclosed during fact discovery.	
Motion in Limine No. 8 to preclude any	GRANTED.
argument, evidence, testimony, or reference	
that Streck Tubes themselves infringe or that	
Streck is the appropriate defendant in this	
case.	
Motion in Limine No. 9 to preclude any	DENIED.
argument, evidence, testimony, or reference	
to the fact that any expert was previously	
retained by or worked with the lawyers and/or	
law firms representing the parties in this case	
in other matters.	
Motion <i>in Limine</i> No. 10 to preclude any	GRANTED.
argument or evidence regarding the number	
or location of attorneys, the cost of the	
litigation, or how it is funded (e.g., investors	
in the litigation, litigation financing,	
attorney's fee arrangements, and/or any fees	
obtained or potentially obtained by counsel	
from this case.	
Motion in Limine No. 11 to preclude any	GRANTED-IN-PART
argument or evidence regarding other	
proceedings involving the patents-in-suit,	Labcorp shall notify the Court in advance of
including other litigations and patent office	offering evidence related to this motion and
proceedings.	obtain the Court's ruling on that evidence
	before presenting it to the jury.
Motion in Limine No. 12 to preclude any	GRANTED.
argument, evidence, testimony, or reference	
disparaging the USPTO or its Examiners.	
Motion in Limine No. 13 to preclude any	GRANTED.
argument or evidence that a damages award	
may lead to adverse events.	

LabCorp's Motion in Limine	Ruling
Motion in Limine No. 1 to preclude reference	GRANTED.
to irrelevant allegations of misconduct by	GRANTED.
Sequenom to unaccused test.	
Motion in Limine No. 2 to preclude any	
reference to invalidity of U.S. Patent No.	DENIED.
6,258,540.	
Motion in Limine No. 3 to preclude reference	DENIED.
to LabCorp's overall revenues.	

LabCorp's Motion in Limine	Ruling	
Motion in Limine No. 4 to preclude reference	DENIED.	
to overall revenues of accused tests.		
Motion in Limine No. 5 to preclude Ravgen's	DENIED	
experts from offering duplicative testimony.	DENIED.	
Motion in Limine No. 6 to preclude Ravgen	DENIED.	
from introducing expert testimony on the	DENIED.	
same subject matter as the <i>Natera</i> Action.		

SO ORDERED, this 12th day of September, 2022.

Alan D Albright

United States District Judge

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS, LLC.,		§	
	Plaintiff,	\$ \$ 8	
NETGEAR, INC.,	Defendant	\$ \$ \$	C.A. No. 1:22-cv-00981-JLH
		\$ \$ \$	
		§	

SUPPLEMENTAL EXPERT REPORT OF DOUGLAS KIDDER REGARDING DAMAGES

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<b>=</b>	Dagganahla Davialti	•
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NETGEAR accused products as implementing the alleged inventive aspect recited in the '442 Patent.

39 Thus, the chipsets are the smallest saleable patent-practicing unit and starting with the substantially higher priced as the SSPPU inflates the damages. 40

#### 6.3.2 FLAWED BENCHMARK PRODUCTS

- 49. Mr. Holzen has attributed value to the '442 Patent by claiming that the entire price premium paid by customers for an accused product over selected WiFi range extenders (the benchmark products) is attributable to the technologies claimed in the '442, '017 and '893 Patents.<sup>41</sup> The selection of a benchmark product is very important to his analysis a lower-priced benchmark will attribute more value to the patents than a higher-priced benchmark.
- 50. Mr. Holzen describes his methodology as follows. In the quote below, the italicized language is copied directly from the Holzen Opening Report, while the normal and bold font come from the Second Holzen Supplement:<sup>42</sup>

I arrived at the relative premium that customers are willing to pay to purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products that NETGEAR tracks in the ordinary course and based on the retail price of thirdparty or NETGEAR products. I understand that the selected benchmark products used in this analysis are comparable to the selected Accused Products but for the inclusion of certain mesh functionality. As previously discussed in the Holzen Reports, this apportioned value of the SSPPU reflects the apportioned incremental value associated with the routing of user data using different software radios (or transceivers), intelligent node placement, and dynamic network reconfiguration. For purposes of the Holzen Reports, I assumed that intelligent node placement and the dynamic network reconfiguration were associated with the technology of the '017 and '893 Patents, respectively. While I understand that the Court has since found that the Accused Products do not infringe the '017 and '893 Patents, this calculation remains an appropriate part of the methodology in calculating the incremental value of the technology that infringes the '442 Patent over the technologically-closest conventional products in the marketplace.<sup>43</sup>

 $<sup>^{39}</sup>$  Supplemental Expert Report of Henry Houh, Ph.D. ("Houh Supplemental Report"), May 19, 2025,  $\P 20$ .

<sup>&</sup>lt;sup>40</sup> Kidder Report,  $\P$ **9**203 – 207.

<sup>&</sup>lt;sup>41</sup> Second Holzen Supplement, ¶17 (seventh bullet).

<sup>&</sup>lt;sup>42</sup> Holzen Opening Report, ¶182. **Emphasis** added.

<sup>&</sup>lt;sup>43</sup> Second Holzen Supplement, ¶17 (seventh bullet). **Emphasis** added.

Notably, in the Second Holzen Supplement, Mr. Holzen claims that his benchmark products are now the "technologically-closest conventional products in the marketplace." <sup>44</sup> However, Mr. Holzen provides no support for this assertion and it is, at best, disingenuous.

51. As I stated in my reply to Mr. Holzen in July of 2024:

Mr. Holzen's attribution rate analysis is predicated on an implicit assumption that the Patents-In-Suit are required to offer mesh technology – not that the Patents-In-Suit offer an improved mesh technology as he claims to understand. As just discussed, Mr. Holzen is comparing the prices of the three accused mesh products with the prices of range extenders that he claims do not include mesh technology. Thus, his asserted price premium is related to the price premium attributed to mesh technology (among other product differences). However, the Complaint states only that each of the three Patents-In-Suit covers "specific improvements in mesh networking technology..." Nowhere does the Complaint claim that the Patents-In-Suit cover the concept of mesh technology. In fact, Mr. Holzen's descriptions of the benefits of the patented technology do not claim that the Patents-In-Suit are necessary to provide mesh networking functionality.<sup>45</sup>

. . .

As a result, Mr. Holzen's selection of benchmark products that presumably do not practice the patented technologies is deeply flawed and contrary to Dr. Bims' opinions. Mr. Holzen compares the prices of accused mesh units with the prices of range extenders to calculate the percent of the ASP attributable to the patented technology. Yet, according to Dr. Bims, the relevant benchmarks would be non-infringing mesh networks – not range extenders.<sup>46</sup>

- 52. Mr. Holzen apparently agrees that the appropriate benchmark is non-infringing mesh networks because, in his deposition, he stated:
  - Q. Are you aware of any mesh networking products that would not infringe the asserted patents?
  - A. I haven't seen any.
  - Q. Okay. You haven't performed that analysis, right?

A. No. That was a conversation that I had with Dr. Bims. In fact, I asked him: Hey, I'd like to be able to compare this to a noninfringing mesh network. Like, I want to do this benchmarking analysis for attribution rates. Can you help me find a noninfringing mesh networking technology, and be it sold by Netgear, be it sold by anyone else, Amazon, Google, someone.

<sup>&</sup>lt;sup>44</sup> Second Holzen Supplement, ¶17 (seventh bullet).

<sup>&</sup>lt;sup>45</sup> Kidder Report, ¶221.

<sup>&</sup>lt;sup>46</sup> Kidder Report, ¶224.

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And he was -- he couldn't find one. I'm not aware of any. I couldn't find any that he said weren't leveraging the patents-in-suit.

So I'm not aware of any by Netgear. I'm not aware of any by any third parties.  $^{47}$ 

- 53. Thus, Mr. Holzen's opinion in the Holzen Report was not based on any particular knowledge that there were no non-infringing mesh networks, it was based on an absence of evidence that any were non-infringing mesh networks he just didn't know so he assumed that there were none.
- 54. In October of 2024, the Court in the *TrackThings v. Amazon and eero* case determined that Amazon's eero devices did not infringe any of the patents TrackThings asserted in that case specifically the '017, '893 and '442 Patents.<sup>48</sup> Thus, between the time of Mr. Holzen's deposition and the Second Holzen Supplement, another court found that there is a non-infringing mesh WiFi product the Amazon eero. In particular, the accused products in that case included the eero Beacon, eero 6, eero 6 pro and the eero 6 range extender.<sup>49</sup>
- 55. Mr. Holzen, however, did not adjust his analysis to account for the presence of a non-infringing mesh WiFi product in either of the Holzen Supplements. He continued to use the same non-mesh range extenders as benchmark products.
- Adjusting Mr. Holzen's analysis to use an Amazon eero mesh product as the benchmark product yields no damages when compared the used by Mr. Holzen as his SSPPU. I understand from Dr. Houh that the eero Beacon is in many ways technically comparable to the 50. The eero Beacon was launched in June 2017 prior to the damages period in this case. Around the date of launch, the eero Beacon was selling for 51. The most recent advertised pricing on the eero website for the eero Beacon is 52. I understand that the accused Orbi devices are higher-spec than the eero Beacon and should command a premium in the market, therefore, a comparison of the price of an eero Beacon and the is very conservative. 53 The price of the eero Beacon

 $<sup>^{47}</sup>$  Deposition of Stephen Holzen ("Holzen Depo."), September 6, 2024 at 36:10-37:5.

<sup>&</sup>lt;sup>48</sup> Docket #208 Final Judgment, in *TrackThings LLC v. Amazon.com, Inc.*, No. 6:23-cv-00133-ADA (W.D. Tex. Nov. 18, 2024).

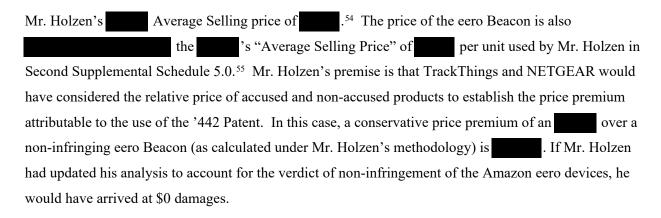
<sup>&</sup>lt;sup>49</sup> Docket #215, Trial Day 1 Transcript, in *TrackThings LLC v. Amazon.com, Inc.*, No. 6:23-ev-00133-ADA (W.D. Tex. 2024), at 237:6-19.

<sup>&</sup>lt;sup>50</sup> Houh Supplemental Report, ¶¶25-26.

<sup>&</sup>lt;sup>51</sup> https://blog.eero.com/the-second-generation-of-eero/. Accessed May 21, 2025.

<sup>&</sup>lt;sup>52</sup> https://eero.com/shop/eero-beacon. Accessed May 21, 2025.

<sup>&</sup>lt;sup>53</sup> Houh Supplemental Report, ¶¶26-27.



### 6.3.3 FLAWED ATTRIBUTION RATE OF

57. As in the Holzen Report, Mr. Holzen starts by estimating the "incremental value of mesh-Wifi technology" over range extenders at of operating profit – per unit (formerly per unit):

Seventh, I then calculated the incremental value of routing user data using different software radios (or transceivers), intelligent node placement, and dynamic network reconfiguration (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution Rate") (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution Rate") (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution Rate") (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution Rate") (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution Rate") (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution Rate") (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution Rate") (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution") (per unit) by the relative premium that the part of the par

- 58. In his deposition, Mr. Holzen described the as "an attribution rate of the adjusted SSPPU operating profits between patented and non-patented technology." Mr. Holzen thus, explicitly stated that he conceptually excluded all non-patented technology from his.
- 59. However, Mr. Holzen's three reports provide three different descriptions of the attribution rate and the final description leaves room for unpatented technology within the Report and Holzen Report, Mr. Holzen describes the attribution rate as attributable to the accused mesh functionality (i.e. the three Patents-in-Suit):

I understand that the selected benchmark products used in this analysis are comparable to the selected Accused Products but for the inclusion of the accused mesh functionality.<sup>58</sup>

• •

<sup>&</sup>lt;sup>54</sup> Second Holzen Supplement, ¶17 (fifth bullet), Schedule 3.0. Note that this calculation is likely an overestimate, for the same reasons I explained in the Kidder Report. *See* Kidder Report, ¶¶199 - 202.

<sup>&</sup>lt;sup>55</sup> Second Holzen Supplement, ¶17 (second bullet), Schedule 5.0.

<sup>&</sup>lt;sup>56</sup> Second Holzen Supplement, ¶17, (seventh bullet). See also Holzen Depo., 97:15 – 22, 98:9 – 20.

<sup>&</sup>lt;sup>57</sup> Holzen Depo., 122:18 – 23, 126:15 – 127:14.

<sup>&</sup>lt;sup>58</sup> Holzen Report, ¶182; Reply Expert Report of Stephen A Holzen ("Holzen Reply Report"), August 15, 2024, ¶67.

### 7. SIGNATURE PAGE

- 89. I certify that, to the best of my knowledge and belief:
  - The statements of fact in this report are true and correct.
  - The reported analyses, opinions and conclusions are limited only by the reported assumptions and are my personal, unbiased and professional analyses, opinions and conclusions.
  - I have no personal interest or bias with respect to the parties involved.
  - My compensation is not contingent on an action or event resulting from the analyses, conclusions or opinions of this report.

Douglas G. Kidder

May 21, 2025

#### **CERTIFICATE OF SERVICE**

I, Alexandra Leeper, Esquire, hereby certify that on May 21, 2025, I caused a copy of Supplemental Expert Report of Douglas Kidder Regarding Damages and Supplemental Exhibits DGK-1 through DGK-4 to be served on the following counsel of record in the manner indicated below:

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<u>/s/ Alexandra Leeper</u> Alexandra Leeper

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	)	
Pl v.	laintiff, ) )	C.A. No. 22-981-JLH (CONSOLIDATED)
NETGEAR, INC.	)	Jury Trial Demanded
D	efendant. )	
	j	

SUPPLEMENTAL EXPERT REPORT OF HENRY HOUH, PH.D.

May 19, 2025

## 

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relevant technical art. As an initial matter, it is unclear what technical feature or functionality Mr. Holzen believes allows users to However, the technical aspects that make Wi-Fi 6 advantageous have nothing to do with routing data through multiple-radio relays. To the contrary, those skilled in the art recognize that the advantages of Wi-Fi 6 focus on technology completely unrelated to the '442 Patent, such as spectrum efficiency, wider channels, MU OFDMA, UL MU MIMO, spectral reuse, Target Wake Time, and QAM. (Mozaffariahrar, Erfan, et al., A Survey of Wi-Fi 6: Technologies, Advances, and Challenges," Future Internet, 14:293, pp. 1-52 at 2 (2022) ("The Wi-Fi 6 standard was officially published in May 2021. The task group focused on providing a four times higher throughput per station while keeping the same power consumption as IEEE 802.11ac or improving it. Since this standard focuses on better spectrum efficiency, it is known as the high-efficiency standard. IEEE 802.11ax modifies both the PHY and MAC layers and introduces multiple features to enhance Wi-Fi users' satisfaction. It achieves current expectations thanks to wider channels, MU OFDMA for channel access, uplink (UL) MU MIMO to improve capacity, SR for spectral efficiency, Target Wake Time (TWT) to manage power consumption, 1024 Quadrature Amplitude Modulation (QAM) to increase throughput, and other additional improvements." (citations omitted)).)

25. Mr. Holzen's assumptions (that speed, reliability, and/or capacity benefits are solely attributed to the '442 Patent, and that is attributable to the '442 and '893 Patents) are also contradicted by *TrackThings LLC v. Amazon.com, Inc., and eero LLC*, No. 6:23-cv-133-ADA (W.D. Tex.) ("*Amazon Litigation*") litigation. I understand that in the *Amazon Litigation*, TrackThings asserted the '442 '893, and '017 Patents against at least the

following products, and that the jury found that these products do not infringe the '442 '893, and '017 Patents:

- eero First Generation (Wi-Fi 5)
- eero Second Generation (Wi-Fi 5)
- eero Beacon (Wi-Fi 5)
- eero 6 (Wi-Fi 6)
- eero 6 Extender (Wi-Fi 6)
- eero Pro 6 (Wi-Fi 6)
- eero 6+ (Wi-Fi 6)
- eero Pro 6E (Wi-Fi 6E)
- eero PoE 6 (Wi-Fi 6)
- eero Max 7 (Wi-Fi 7)

(See, e.g., TrackThings LLC v. Amazon.com, Inc., 6:23-cv-133-ADA, D.I. 215 (Oct. 7, 2024 Trial Transcript) at 237:6-19 (W.D. Tex. Filed Nov. 20, 2024) (identifying accused eero products) and TrackThings LLC v. Amazon.com, Inc., No. 6:23-cv-133-ADA, D.I. 203 (Verdict Form) at 3 (W.D. Tex. Oct. 11, 2024) (jury verdict that accused eero products do not infringe '017 Patent, Claims 1 and 6; '442 Patent, Claims 1, 9, 15, and 17; and '893 Patent, Claim 1).) For example, comparing the Orbi RBS10 (one of the products Mr. Holzen uses as a benchmark NETGEAR product) to the eero 6 suggests that any differences in speed, reliability, or capacity are due to things like differences in the Wi-Fi standard being used and not related to the '442 Patent (and/or '893 and/or '017 Patents). (Compare, e.g., eero 6 Data Sheet (peak rates of 574 Mbps (2.4 GHz) and 1201 Mbps (5 GHz) using IEEE 802.11 a/b/g/n/ac/ax (which includes Wi-Fi 6), coverage of 1,500 square feet, 75+ device simultaneous support, etc.), with Orbi RBS10 Data Sheet (peak rates of 400 Mbps (2.4 GHz using IEEE 802.11b/g/n) and 866 Mbps (5 GHz using IEEE 802.11a/n/ac) which includes Wi-Fi 5 but not Wi-Fi 6, coverage of 1,500 square feet, etc.).) Indeed, those skilled in the art recognize that the advertised speed of mesh Wi-Fi devices is commonly based on the Wi-

Fi standard being used. (*Id.* (data sheets acknowledge that advertised speeds are based on capabilities of 802.11 standard being used).)

- 26. From a technical perspective, the is more comparable to the eero Beacon because both use the same Wi-Fi standard (Wi-Fi 5), both are dual-band, and both can only be used as satellites because they are not designed for a wired connection. (See, e.g., eero Data Sheet).) A person of skill in the art would recognize and eero Beacon Data Sheet and has the technical advantage of using higher level components, such as a better that the processor and multiple high-performance internal antennas, and includes additional features such as WPS (Wi-Fi Protected Setup) that are not included for the eero Beacon. (Compare eero and eero Beacon Data Sheet (showing use of 700 MHz quad-core processor), with Data Sheet (NETGEAR-TRACK-009631-34 at -9634) (showing use of 710 MHz quad-core processor, "Two (2) high-performance internal antennas," and "Push Button WPS and SYNC support").) Although both use the same wireless standard, the better components and design is a likely reason that NETGEAR advertised "speeds up to 1.2Gbps" including 400 Mbps for the 5GHz band ( Data Sheet) and eero only advertised that the eero Beacon provided speeds of 350 Mbps (https://eero.com/shop/eero-beacon).
- 27. Based on my review, comparing the capabilities of the Orbi and Nighthawk products to the eero products suggests that the advantages of the NETGEAR products are unrelated to '442 Patent. For example, comparing (i) an eero Wi-Fi 6 product, such as the eero Pro 6 (which uses 802.11ax 2.4GHz and 5 GHz), with (ii) NETGEAR Wi-Fi 6 products (which also use 802.11ax 2.4GHz and 5 GHz) shows that the advantages of the NETGEAR products are based on the fact that NETGEAR included things like a dedicated backhaul (NETGEAR patented

### V. CONCLUSION

29. In my opinion, Mr. Holzen's analysis is not supported by a proper technical or logical analysis for the reasons stated above.

I declare under the penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge, information, and belief.

Henry H. Houh

tener H. Hoah.

May 19, 2025

#### **CERTIFICATE OF SERVICE**

I, Alexandra Leeper, Esquire, hereby certify that on May 21, 2025, I caused a copy of Supplemental Expert Report of Henry Houh, Ph.D. to be served on the following counsel of record in the manner indicated below:

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/s/ Alexandra Leeper
Alexandra Leeper

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IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

CASE NO.

22-981-JLH

V.

NETGEAR, INC.,

Defendant.

REMOTE DEPOSITION OF

STEPHEN A. HOLZEN

VOLUME 2 -- Pages 250 to 417

Tuesday, May 27, 2025

Reported Stenographically by: Shaaron M. Shigio

CSR No. 12286

Job No: 1338620

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2	FOR PLAINTIFF TRACKTHINGS LLC:	2	Tuesday, May 27, 2025	
3	Schulte Roth & Zabel, LLP	3	00	
4	BY: PRIYADARSHINI DAS, ATTORNEY AT LAW	4	THE VIDEOGRAPHER: Good morning. We are now	w
5	CHRISTOPHER GERSON, ATTORNEY AT LAW	5	on the record. This begins Videotape Number 1 in the	•
6	(via videoconference)	6	deposition of Stephen Holzen, Volume 2, in the matter	
7	919 Third Avenue	7	of TrackThings LLC versus Netgear, Inc.	
8	New York, New York 10022	8	Today is Tuesday, May 27th, 2025. The time is	
9	Priyadarshini.das@srz.com	9	8:05 a.m. Pacific time. This deposition is being taken	
10	Telephone: 212-756-2000	10	via Zoom Web conferencing at the request of the	
11	1	11	defendants.	
12	FOR DEFENDANT NETGEAR, INC.:	12	The videographer is Dan Gavern. The court	
13	Cooley LLP	13	reporter is Shaari Shigio. We're both for Magna Legal	
14	BY: ALLIE LEEPER, ATTORNEY AT LAW	14	Services.	
15	ANGELA MADRIGAL, ATTORNEY AT LAW	15	Would counsel and all parties present please	
16	(via videoconference)	16	state your appearance and whom you represent.	
17	3175 Hanover Street	17	Allie Leeper on behalf of the defendant,	
18	Palo Alto, California 94304	18	Netgear, and with me is my colleague Angela Madrigal.	
19	Aleeper@cooley.com	19	MS. DAS: Priyadarshini Das, counsel from	
20	Telephone: 650-843-5000	20	Schulte Roth + Zabel, for plaintiff, TrackThings, LLC;	
21	ALSO PRESENT:	21	and my colleague Chris Gerson is with me.	
22	Dan Gavern, Videographer	22	THE VIDEOGRAPHER: Thank you.	
23		23	The court reporter will introduce themselves,	
24		24	swear in the witness, and then we'll begin.	
		1	,	
25		25	THE REPORTER: My name is Shaari Shigio. I am	



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outside the scope of my opinion in this -- in this case.

#### BY MS. LEEPER:

- Q. Are all networks with dynamic network reconfiguration mesh WiFi networks?
- A. Again, I think that you probably need to ask that question to Dr. Bims. He's the technical expert in these case and these are technical questions that may or may not have something to do with the Markman order. So I would probably direct you to answer those questions as these -- to Dr. Bims as these questions fall outside the scope of my expertise as a damages expert.
  - Q. Did you pose these questions to Dr. Bims?
- A. I may have. I don't remember specifically asking the exact question that you asked, but we did discuss the technology at issue in this case.
- Q. At some points today, you have talked about differentiated front hall and back hall radios. What do you mean by that phrase?
- A. That's my layman's explanation as to my understanding of the technology that's being used as part of the '442 patent. And "front hall, back hall" just meaning like my layman's interpretation of sending signal to either to another router or another node or

differentiated software radios. That's it. And my understanding is that that can relate to a front hall, an antenna that goes to the -- an end point -- an antenna that sends a signal that's directed at an end point and another antenna that can be used in a different fashion.

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Q. What is your understanding of the difference between mesh WiFi and the three asserted TrackThings patents?

MS. DAS: Objection; form.

THE WITNESS: The difference between the three asserted TrackThings patents?

### BY MS. LEEPER:

- Q. And mesh WiFi.
  - A. That's, again, probably a good question for Dr. Bims to get into, you know, what are the nitty-gritty differences and distinction between them.
  - Q. Are you aware of any non-infringing mesh WiFi products on the market from any company?
- A. So I -- sort of a loaded question because I think what you're asking is, in part, do I know of any aside from the ongoing litigation with Amazon, and so I'll answer it in separate pieces.

I am not aware -- when I wrote the affirmative report and when I wrote the reply report, I was not

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to an end point. That's one -- that's -- I think that's the front hall.

And then you got the back hall channel, which is the antenna that goes back to -- sends the signal essentially back to the Internet.

- Q. What is your understanding --
- A. Let me -- let me just finish that real quick. But the final word on that is Dr. Bims.
- Q. Do you have an understanding of the relationship between front hall and back hall radios and the '442 patent?
  - A. I don't -- I'm not sure what you're asking.
- Q. You said that this was part of your layman's explanation for the technology of the '442 patent. I'm asking for what your understanding is of the relationship between front hall and back hall radios and the '442 patent.
- A. Correct. And I don't understand what that questions means. What do you mean by "relationship" and what do you mean by "part of the '442 patent"? Like I'm not -- I'm not picking up what you're asking.
- Q. How do front hall and back hall radios -- what role do they play in your understanding of the '442 patent?
  - A. I'm just trying to talk about two

aware of any. Because all -- all were assumed to be infringing, that I was aware of. Right. So I knew -- there's only two that I was really aware of in detail; maybe three, if you include Google.

Now, your question is -- I presumably picking up on something that Mr. Kidder -- Dr. Kidder. I forget if he's a Ph.D. -- Kidder wrote in his report around using the eero Beacon as a non-infringing --

THE REPORTER: I'm sorry. The what beacon? THE WITNESS: It's eero, an eero Beacon.

He referenced an eero Beacon as a potential non-infringing alternative to -- or possessing at least non-infringing technology that is used in a mesh WiFi network.

And what I did not see in Mr. Kidder's report is any reference to a technical expert opinion so it's unclear to me that Mr. Kidder has support for his conclusion that the eero products themselves are non-infringing, and as it relates to the ongoing dispute between TrackThings and Amazon I understand that that litigation has not yet resolved.

22 BY MS. LEEPER:

Q. Did you ask Dr. Bims whether the eero devices are non-infringing as part of preparing either your supplemental or second supplemental report?

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A. I did not ask him that question, but I discussed it with counsel and what I understand is that TrackThings, including Dr. Bims, have not changed their opinions -- well, Dr. Bims has not changed his opinion with respect to the fact that the eero -- e-e-r-o -- products are still infringing. So that hasn't changed and that my understanding is that TrackThings still disputes the current ruling that's on the table.

Q. Is it your understanding that the '442 patent covers routing user data using different software radios or transceivers?

MS. DAS: Objection; form.

THE WITNESS: Your question, if I remember correctly, was what is my understanding of the '442 patent. And in the opening report, I gave a description of all the patents-in-suit at the time. I'm starting on page 20, but really the meat of it begins on page 21.

And what I note there is that the '442 patent is titled, "An Apparatus and a Method of Configurable Network." And then I go on to say that each of the patents-in-suit, including the '442 patent, relates to a -- the enablement of a flexible and dynamic mesh WiFi network system and that the patents-in-suit cover three features.

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In particular with respect to the '442 patent, it relates to the routing of users' data using different software radios, which then in the subsequent supplemental report I put in the parenthetical transceivers.

And then in paragraph 68, 68 and 69 of the opening report, I gave a more detailed description of the '442 patent. And then on paragraph 72, I actually give my understanding as to the benefits that are associated with the technology claimed by the '442 patent.

#### BY MS. LEEPER:

Q. Is it your understanding that the '442 patent covers all methods of routing user data using different software radios or transceivers?

MS. DAS: Objection; form.

THE WITNESS: I don't know if I've reached the conclusion or Bims informed me that it was all forms or not. I just don't recall what we talked about in that regard. My assumption, which is the same as the assumption in all cases, is that the claims of the '442 patent read on or maybe I said that backwards, but that the technology reads on the '442 patent which relates to different -- the use of differentiated radios in a mesh WiFi network.

BY MS. LEEPER:

Q. Is it your opinion that the '442 patent covers the only way of improving speed of a mesh WiFi device? MS. DAS: Objection; form.

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THE WITNESS: I have never given the opinion that the '442 patent is the only way. In fact, as part of -- as part of some of the work that we've done on the apportionment front, to the extent that there are other technologies that assist with improving speed, we've accounted for that already.

BY MS. LEEPER:

Q. And I apologize for the -- the wording on my behalf. I'm going to re-ask it again with slightly different wording.

Is it your understanding that the '442 patent covers the only way of improving speed for a mesh WiFi device?

MS. DAS: Objection to form.

THE WITNESS: I don't believe I say that in the expert report and I don't think that that is my opinion. I think to the extent that you would articulate that as my opinion, then I would say that that's a mischaracterization. And I think in terms of trying to ask very detailed, technical questions, probably you're best bet to get detailed, technical

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answer is to address those questions to Dr. Bims.
 However, I can tell you that as part of my

apportionment analysis, I account for certain technologies that do assist with the improvement of speed.

BY MS. LEEPER:

Q. What technologies assist with the improvement of speed?

A. Well, that would be in the -- if you recall, Supplemental Schedule 5.3. There's different battery powers, there's different WiFi technologies. There's WiFi 3, WiFi 4, WiFi 5, WiFi 6. So some of those things are serving to enhance speed as well as other performance benefits, and so by nature of the fact that I'm doing an attribution rate which is like a comparison between the infringing technology to non-infringing technologies, and then allocating values between the patents-in-suit, what I'm doing is crediting value to other technologies that fall outside the footprint of the patent.

Q. Can the processor improve speed using a faster processor?

MS. DAS: Objection; form.

THE WITNESS: Again, I can't speak to the fact of the matter because those are going to be technical



### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	)
Plaintiff,	)
v.	) C.A. No. 1:22-cv-00981-JLH
NETGEAR, INC.,	)
Defendant.	)
	)

### SECOND SUPPLEMENTAL EXPERT REPORT OF STEPHEN A. HOLZEN

Stephen A. Holzen

May 9, 2025

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February 23, 2025 (units of Accused Products) by and then again by for the reasons previously explained in the Holzen Reports. 40

# 2. Royalty Rate

- 17. It is my opinion that there is no established royalty rate for the Patent-in-Suit. 41 In the absence of an established royalty rate, the determination of reasonable royalty damages can be based upon the construct of a hypothetical negotiation between a willing licensee and a willing licensor at the date of first infringement. 42 The standard I adopt for determining a reasonable royalty is based on the incremental value that the patented invention adds to an end product. 43 This standard is consistent with the academic literature that I consider in the normal course of my work, 44 consistent with other court decisions that I reviewed in the normal course of my work, 45 and consistent with the standard I follow in my other patent damages engagements, including in *VideoShare*, *LLC v. Google LLC et al.* (W.D. Tex, 6:19-cv-00663-ADA) 46 and in *TrackThings vs. Amazon.com Services LLC and eero LLC* (W.D. Tex, 6:23-cv-00133-ADA). 47 As previously described in the Holzen Reports, I perform an analysis that measures the "incremental value associated with the use made of the Patent[]-in-Suit by the Defendant" using a multi-step process: 48
  - First, I calculated the average selling price for the Accused Products (per unit from April 6, 2017 to February 23, 2025). 49
  - Second, I considered the as the smallest salable patent practicing unit ("SSPPU") for the reasons discussed in the Holzen Reports, including my

<sup>&</sup>lt;sup>39</sup> Second Supplemental Schedule 2.0.

<sup>&</sup>lt;sup>40</sup> Affirmative Holzen Report, ¶¶ 98-101.

<sup>&</sup>lt;sup>41</sup> Affirmative Holzen Report, ¶ 80.

<sup>&</sup>lt;sup>42</sup> Affirmative Holzen Report, ¶ 80.

<sup>&</sup>lt;sup>43</sup> Affirmative Holzen Report, ¶¶ 172-195, 200, 203.

<sup>&</sup>lt;sup>44</sup> See, *e.g.*, Michael Mard and Joseph A. Agiato, Jr., Valuing Intellectual Property & Calculating Infringement Damages, AICPA Practice Aid 99-2 (1999), p. 49; Weil, Roman et al, *Litigation Services Handbook*, Sixth Edition, The Role of the Financial Expert, Section 20, pp. 6, 22, 29, 31, and 36; https://www.mintz.com/insights-center/viewpoints/2231/2018-02-15-federal-circuit-approves-apportioning-damages-through; https://www.finnegan.com/en/insights/articles/court-rejects-damages-report-for-reliance-on-non-comparable-licenses-and-for-failure-to-account-for-unpatented-features-in-comparable-licenses.html.

<sup>&</sup>lt;sup>45</sup> Ericsson, Inc. v. D-Link Sys., Inc., 773 F.3d 1201, 1226 (Fed. Cir. 2014); Commonwealth Sci. & Indus. Research Organisation v. Cisco Sys., 809 F.3d 1295, 1301 (Fed. Cir. 2015); Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., 853 F.3d 1370, 1380 (Fed. Cir. 2017).

<sup>&</sup>lt;sup>46</sup> [Redacted] Defendants' Motion to Exclude Damages Opinions of Mr. Stephen Holzen Under Daubert and Federal Rule of Evidence 702, August 31, 2021, *VideoShare, LLC v. Google LLC et al.* (W.D. Tex, 6:19-cv-00663-ADA); Docket #180 [sealed] in *VideoShare, LLC v. Google LLC et al.* (W.D. Tex, 6:19-cv-00663-ADA) denying motion. <sup>47</sup> [Redacted] Defendants' Opposed Motion to Exclude the Unreliable Testimony of TrackThings' Damages Expert Stephen A. Holzen, April 23, 2024, *TrackThings vs. Amazon.com Services LLC and eero LLC* (W.D. Tex, 6:23-cv-00133-ADA); Docket #172 [sealed] in *TrackThings vs. Amazon.com Services LLC and eero LLC* (W.D. Tex, 6:23-

<sup>&</sup>lt;sup>49</sup> Affirmative Holzen Report, ¶ 176; Second Supplemental Schedule 3.0.

understanding from Dr. Bims that Accused Routers include non-patented			
functionality and have more features than the Accused Satellites. <sup>50</sup> The average			
selling price of the SSPPU was	per unit. <sup>51</sup>		

- Third, I compared the average per-unit selling price of the Accused Products ( ) to the per-unit price of the SSPPU ( ) sold as a standalone product and allocated the difference ( per unit) back to Defendant. 52
- Fourth, I observed that Defendant charged a lower price for the SSPPU when it was sold as a bundle (per unit) compared to when it was sold as a standalone product (per unit). Therefore, I allocated per unit back to NETGEAR and instead used the per-unit amount as the selling price of the SSPPU for the remainder of my analysis (the "Adjusted SSPPU"). 54
- Fifth, I calculated the gross profit that NETGEAR earned from the Adjusted SSPPU (per unit) by subtracting the standalone SSPPU's cost of goods sold (per unit) from the Adjusted SSPPU average selling price (per unit). 55
- Sixth, I calculated the operating profit that NETGEAR earned from the Adjusted SSPPU (per unit) by subtracting NETGEAR's operating expenses (per unit) from the gross profit earned from the Adjusted SSPPU (per unit). These operating costs include at least technical support costs, customer marketing direct, and indirect overhead costs (including sales, product marketing, and G&A). ST
- Seventh, I then calculated the incremental value of routing user data using different software radios (or transceivers), intelligent node placement, and dynamic network reconfiguration (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution Rate") (per unit). Self arrived at the relative premium that customers are willing to pay to purchase the Accused Products by comparing the price of certain of the

<sup>&</sup>lt;sup>50</sup> Affirmative Holzen Report, ¶ 177. I understand that NETGEAR has challenged my selection of strength as the SSPPU for infringement of the '442 Patent if the '017 Patent and '893 Patent are not infringed. However, the selection of the select

<sup>&</sup>lt;sup>51</sup> Affirmative Holzen Report, ¶ 177; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>52</sup> Affirmative Holzen Report, ¶ 178; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>53</sup> Affirmative Holzen Report, ¶ 179; Second Supplemental Schedule 3.1.

<sup>&</sup>lt;sup>54</sup> Affirmative Holzen Report, ¶ 179; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>55</sup> Affirmative Holzen Report, ¶ 180; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>56</sup> Affirmative Holzen Report, ¶ 181; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>57</sup> Affirmative Holzen Report, ¶ 181.

<sup>&</sup>lt;sup>58</sup> Affirmative Holzen Report, ¶ 182: Second Supplemental Schedule 3.0.

and based on the retail price of third-party or NETGEAR products. <sup>59</sup> I understand that the selected benchmark products used in this analysis are comparable to the selected Accused Products but for the inclusion of certain mesh functionality. <sup>60</sup> As previously discussed in the Holzen Reports, this apportioned value of the SSPPU reflects the apportioned incremental value associated with the routing of user data using different software radios (or transceivers), intelligent node placement, and dynamic network reconfiguration. <sup>61</sup> For purposes of the Holzen Reports, I assumed that intelligent node placement and the dynamic network reconfiguration were associated with the technology of the '017 and '893 Patents, respectively. <sup>62</sup> While I understand that the Court has since found that the Accused Products do not infringe the '017 and '893 Patents, this calculation remains an appropriate part of the methodology in calculating the incremental value of the technology that infringes the '442 Patent over the technologically-closest conventional products in the marketplace.

Eighth, I then calculate the incremental value of only the '442 Patent (per unit) by allocating of the incremental value of routing user data using different software radios (or transceivers), intelligent node placement, and dynamic network reconfiguration (per unit) to the '442 Patent. This analysis is based on data obtained from



18. This calculation of incremental value attributable to the '442 Patent credits back to NETGEAR per unit for the value associated with mesh improvements not covered

 $<sup>^{59}</sup>$  Affirmative Holzen Report, ¶ 182; Second Supplemental Schedule 5.0. *See also* Second Supplemental Schedule 5.1 and Second Supplemental Schedule 5.2 for alternate Attribution Rate calculations.

<sup>&</sup>lt;sup>60</sup> Affirmative Holzen Report, ¶ 182.

<sup>&</sup>lt;sup>61</sup> Affirmative Holzen Report, ¶¶ 67, 182.

<sup>&</sup>lt;sup>62</sup> Affirmative Holzen Report, ¶ 67.

<sup>63</sup> Affirmative Holzen Report, ¶¶ 192-195; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>64</sup> Affirmative Holzen Report, ¶¶ 193-194; Second Supplemental Schedule 6.0.

<sup>&</sup>lt;sup>65</sup> Affirmative Holzen Report, ¶ 194; Second Supplemental Schedule 6.0.

<sup>&</sup>lt;sup>66</sup> Affirmative Holzen Report, ¶ 194; Second Supplemental Schedule 6.0.

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

JURY TRIAL DEMANDED

TRACKTHINGS LLC'S REPLY IN SUPPORT OF ITS MOTION IN LIMINE NO. 1

Netgear's opposition to TrackThings' MIL 1 relies on a misconstruction of the record, asserting "TrackThings' expert, Mr. Holzen, put the outcome of the *Amazon* case directly at issue by explicitly relying on *Amazon*." Opp. at 1. Mr. Holzen did no such thing. Netgear cites Mr. Holzen's *reply* report, but that was *responding to Netgear's* expert's "

Opp. Ex. 1 ¶ 63. The import of Netgear's argument is untenable: that if Netgear itself relies on excludable material, any response addressing that material waives exclusion. Mr. Holzen did not "explicitly rely[] on *Amazon*," and his reply report is no basis for denial of this motion. Opp. at 2.

Nor is Netgear correct that TrackThings' damages theory hinges on the nonexistence of "competitor *mesh* products that do not include the claimed improvements," rendering the *Amazon* verdict necessary rebuttal evidence. *Id.* That is an incorrect characterization of Mr. Holzen's theory. Mr. Holzen's actual opinion focused on benchmark products "comparable to the selected Accused Products but for the inclusion of the accused mesh functionality." Ex. A ¶ 182. And the only source Netgear cites for its misunderstanding traces back to its own characterization of Mr. Holzen's theory. Opp. at 2 (citing "D.I. 265 at [] 8," which is itself quoting Netgear's own Daubert motion (D.I. 245 at 4), not Mr. Holzen). Netgear citing its own incorrect version of Mr. Holzen's opinion does not establish relevance or overcome the substantial prejudice here.

Nor is Netgear's discussion of authority persuasive. To distinguish *Helios*, Netgear again relies on its inaccurate claim that "TrackThings' expert relies directly on whether a non-infringing mesh product exists" (without any citation). Opp. at 3. But as explained above, and as in *Helios*, Mr. Holzen "does not rely on any assumption as to whether [Amazon's] products infringe the [asserted patent]," and accordingly "any minimal probative value is substantially outweighed by the risk of unfair prejudice to Plaintiffs." *Helios*, 2015 WL 3653098, at \*1.

Respectfully submitted,

Dated: New York, NY June 20, 2025

#### MCCARTER & ENGLISH, LLP

# /s/ Alexandra M. Joyce

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Attorneys for Plaintiff TrackThings LLC

# Exhibit A

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

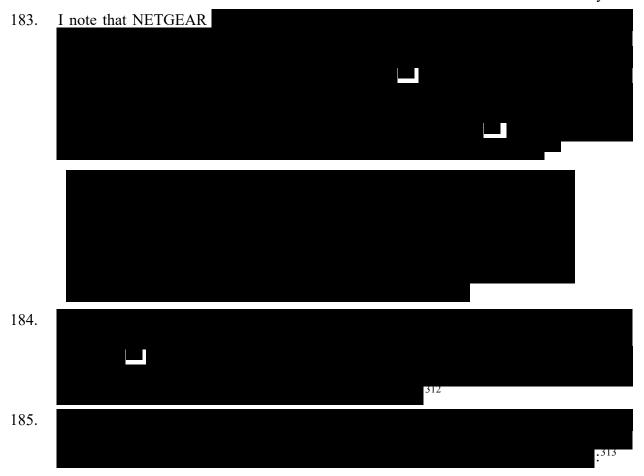
TRACKTHINGS LLC,	)
Plaintiff,	)
v.	) C.A. No. 1:22-cv-00981-JLH
NETGEAR, INC.	)
Defendant.	) ) )

# AFFIRMATIVE EXPERT REPORT STEPHEN A. HOLZEN

Stephen A. Holzen January 25, 2024

	d. Adjusted Price of the SSPPU
179.	I then noted that NETGEAR charges a lower price for the SSPPU (per unit) when it is sold as a bundle compared to when it is sold as a standalone product (per unit). Per unit). Per unit back to NETGEAR and use per unit as the selling price for the purpose of further calculation ("the Adjusted SSPPU"). Per unit as the selling price for the purpose of further calculation ("the Adjusted SSPPU").
	e. Gross Profit from the Adjusted SSPPU
180.	I then calculated the gross profit that NETGEAR earns from the Adjusted SSPPU (per unit) by subtracting the standalone SSPPU's cost of goods sold (per unit) from the Adjusted SSPPU average selling price (per unit).
	f. Operating Profit from the Adjusted SSPPU
181.	Next, I calculate the operating profit NETGEAR earned from the Adjusted SSPPU (per unit) by subtracting NETGEAR's per-unit operating costs (per unit) from the gross profits of the Adjusted SSPPU (per unit). I understand that NETGEAR
	304
	g. Profit Sharing Allocation
182.	I then calculate the incremental value of the Patents-in-Suit (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products ("Attribution Rate") (purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products. 306 I
	I then calculate the incremental value of the Patents-in-Suit (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products ("Attribution Rate") (purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products. 306 I
<sup>297</sup> Exhi <sup>298</sup> Exhi	I then calculate the incremental value of the Patents-in-Suit (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products ("Attribution Rate") (purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products. Solit 3.2. Soliti 3.2.
<sup>297</sup> Exhi <sup>298</sup> Exhi <sup>299</sup> Exhi	I then calculate the incremental value of the Patents-in-Suit (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products ("Attribution Rate") (purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products. Soliti 3.0. Soliti 3.0.
<sup>297</sup> Exhi <sup>298</sup> Exhi <sup>299</sup> Exhi <sup>300</sup> Exhi <sup>301</sup> Defe	I then calculate the incremental value of the Patents-in-Suit (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products ("Attribution Rate") (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products. Subit 3.0.  Sibit 3.0.  Sibit 3.0.  Sendant NETGEAR, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's
297 Exhi 298 Exhi 299 Exhi 300 Exhi 301 Defe Interrog 302 Depo	I then calculate the incremental value of the Patents-in-Suit (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products ("Attribution Rate") (purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products. (bit 3.0.) (bit 3.0.) (bit 3.0.) (characteristic) (characteristic) (bit 3.0.) (characteristic) (characteristic) (characteristic) (characteristi
297 Exhi 298 Exhi 299 Exhi 300 Exhi 301 Defe Interrog 302 Depo 303 Exhi	I then calculate the incremental value of the Patents-in-Suit (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products ("Attribution Rate") (purchase the Accused Products ("Attribution Rate") (purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products. Soliti 3.2.  (abit 3.0.)  (abit 3.0.)  (bit 3.0.)  (condant NETGEAR, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's atories Nos. 2 and 5, December 1, 2023, p. 14.  (osition of Sandeep Harpalani, November 28, 2023, pp. 128-129; NETGEAR-TRACK-006765-800 at 776.  (bit 3.0.)
297 Exhi 298 Exhi 299 Exhi 300 Exhi 301 Defe Interrog 302 Depo	I then calculate the incremental value of the Patents-in-Suit (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products ("Attribution Rate") (purchase the Accused Products of the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products. (bit 3.0.) (bit 3.0.) (bit 3.0.) (channel NETGEAR, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's atories Nos. 2 and 5, December 1, 2023, p. 14.) (osition of Sandeep Harpalani, November 28, 2023, pp. 128-129; NETGEAR-TRACK-006765-800 at 776.) (bit 3.0.) (bit 3.0.) (bit 3.4.) (bit 3.4.) (bit 3.0.)

understand that the selected benchmark products used in this analysis are comparable to the selected Accused Products but for the inclusion of the accused mesh functionality.<sup>307</sup>



<sup>&</sup>lt;sup>307</sup> Interviews with Dr. Bims.

<sup>&</sup>lt;sup>308</sup> Deposition of Sandeep Harpalani, November 28, 2023, p. 80.

<sup>&</sup>lt;sup>309</sup> Deposition of Sandeep Harpalani, November 28, 2023, pp. 80-82.

<sup>&</sup>lt;sup>310</sup> Deposition of Sandeep Harpalani, November 28, 2023, pp. 80-81. See also Deposition of Joseph Emmanuel, December 13, 2023, pp. 123-124.

<sup>&</sup>lt;sup>311</sup> Deposition of Sandeep Harpalani, November 28, 2023, p. 81.

<sup>&</sup>lt;sup>312</sup> Deposition of Sandeep Harpalani, November 28, 2023, p. 82.

<sup>&</sup>lt;sup>313</sup> NETGEAR-TRACK-007040-071 at 051.

# **EXHIBIT 13B**

TrackThings' MIL 2 (including NETGEAR'S Opposition and TrackThings' Reply)

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Case No. 22-981-JLH (Consolidated)

Plaintiff,

JURY TRIAL DEMANDED

v.

**NETGEAR, INC.,** 

Defendant.

TRACKTHINGS LLC'S MOTION IN LIMINE NO. 2

Plaintiff TrackThings LLC ("TrackThings") respectfully submits the following motion *in limine*.

I. MIL NO. 2: The parties shall be precluded from introducing evidence, testimony, or argument regarding pretrial proceedings or issues including but not limited to discovery disputes or dispositive motion practice (or the results of those motions) including patents and claims no longer asserted.

TrackThings' second motion in limine seeks to prevent the parties from, inter alia, referencing discovery disputes and the dispositive motion practice that has taken place in this case and, similarly, to prevent the parties from referencing patents and claims that are no longer asserted. Similar to TrackThings' first motion in limine, MILs like this are routinely granted and included in courts' standing orders on MILs. See, e.g., ActiveVideo Networks, Inc. v. Verizon Comme'rs, Inc., No. 2:10CV248, 2011 WL 7036048, at \*6 (E.D. Va. July 5, 2011) (granting motion to exclude evidence that court invalidated one of the asserted patents in the case); Radware, Ltd. v. F5 Networks, Inc., No. 13-CV-02024-RMW, 2016 WL 590121, at \*16 (N.D. Cal. Feb. 22, 2016) (granting patentee's motion to preclude the accused infringer from introducing evidence that the patentee had dropped some of the patent claims as the suit progressed); IOENGINE, LLC v. PayPal Holdings, Inc., No. 18-452-WCB, 2022 U.S. Dist. LEXIS 127876, at \*27 (D. Del. June 15, 2022) ("I agree with Ingenico and PayPal that the introduction of evidence regarding patents that are not asserted in these cases may confuse or mislead the jury."); Fairchild Semiconductor Int'l Inc. v. Power Integrations Inc., No. 12-540-LPS, D.I. 614, at 1 (D. Del. Oct. 31, 2018) (granting MIL to preclude "introducing evidence or argument regarding patents no longer at issue in this case."); see also Ex. A, Motion In Limine No. 1 in W.D.T.X.; Ex. B, Motion In Limine No. 1 in E.D.T.X.

Netgear apparently disputes TrackThings' MIL because Netgear would like to make reference to the Court's summary judgment finding of non-infringement as to previously asserted

U.S. Patent Nos. 9,642,017 ("'017 patent") and 10,107,893 ("'893 patent) during the course of the trial. According to Netgear, these findings are somehow relevant to the damages calculation from Mr. Holzen. However, as explained in TrackThings' letter motion, Mr. Holzen has prepared a Supplemental Expert Report that allows him to testify about the damages Netgear owes to TrackThings without need to reference the previously asserted '893 and '017 patents:

The Supplement applies the same per-unit royalty rate for the '442 patent as the prior reports—explaining why that remains a proper apportionment of value. It also applies the same method for estimate missing sales. *No new opinions were included*, and the Supplement frames how Mr. Holzen would address the technology related to the now-dismissed patents, without mentioning those patents themselves to the jury.

(D.I. 351, Plaintiff March 27, 2025 letter at 1.) (underlined emphasis added.)<sup>1</sup>

And, even to the extent that the supplement is not allowed, Mr. Holzen's original reports still arrive at this same conclusion regarding the damages owed for the '442 patent and still use the same methodology. Therefore, Mr. Holzen could still present his same theory to the jury again without reference to the dropped patents. Netgear's insistence on referencing those patents, Mr. Holzen's damages calculations for those patents, and the Court's summary judgment rulings is simply unnecessary, and would significantly confuse the jury. Accordingly, TrackThings respectfully requests that the Court grant TrackThings' motion *in limine* so that the jury hears only about the relevant, asserted patent in this case and not about patents that are no longer at issue.

<sup>-</sup>

<sup>&</sup>lt;sup>1</sup> Netgear's apparent refusal to agree with this motion in limine and its expressed intent to refer to the previously asserted patents and the Court's finding of non-infringement are further reasons why TrackThings's motion for leave to serve Mr. Holzen's Supplemental Report (D.I. 351) should be granted. The report simplifies the issues for the jury, avoids the unnecessary prejudice and confusion that would result from referencing dropped patents, and includes damages calculations for just the '442 patent.

Dated: New York, New York April 1, 2025 Respectfully submitted,

#### MCCARTER & ENGLISH, LLP

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Attorneys for Plaintiff TrackThings LLC

# Exhibit A

January 23, 2024 CLERK, U.S. DISTRICT COURT WESTERN DISTRICT OF TEXAS

BY: J. Galindo-Beaver

DEPUTY

# IN THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS WACO DIVISION

# STANDING ORDER GOVERNING PROCEEDINGS (OGP) 4.4—PATENT CASES

This OGP governs proceedings in all patent cases pending before the undersigned or Judge Derek T. Gilliland and takes effect upon entry in all patent cases, except where noted. If there are conflicts between this OGP and prior versions in existing cases that the parties are unable to resolve, the parties are encouraged to contact the Court for guidance via email to the Court's law clerk.

Parties should generally email any inquiries to the Court's law clerk. The Court's voicemail is not checked regularly. Email is the preferred contact method.

Parties should generally use the following email address that includes the Court's law clerks for both Judge Albright and Judge Gilliland:

TXWDml LawClerks WA JudgeAlbright&Gilliland@txwd.uscourts.gov.

Messages directed only to Judge Albright's law clerks may be sent to:

TXWDml LawClerks WA JudgeAlbright@txwd.uscourts.gov.

Messages directed only to Judge Gilliland's law clerks may be sent to:

TXWDml NoJudge Chambers WA JudgeGilliland@txwd.uscourts.gov.

### I. NOTICE OF READINESS<sup>1</sup>

In all patent cases pending before the undersigned or Judge Gilliland, the parties are directed to jointly file the Case Readiness Status Report ("CRSR") in the format attached as Appendix B: (a) within 7 days after the Defendant (or at least one Defendant among a group of related Defendants sued together) has responded to the initial pleadings in cases where there are no CRSR Related Cases, or (b) when there are CRSR Related Cases, within 7 days after the last Defendant (or last Defendant group when at least one Defendant among the group has responded) among the CRSR Related Cases has responded to the initial pleadings. The CRSR shall be filed in each case and identify all other CRSR Related Cases. For this Order, cases shall be considered CRSR Related Cases when they meet both criteria: (1) the cases are filed within 30 days after the first case is filed, and (2) the cases share at least one common asserted patent.

The parties shall meet and confer before jointly filing the CRSR. Plaintiff shall have responsibility for filing the CRSR on time. If the parties have any pre-*Markman* issues needing resolution, the parties shall email the Court a joint submission of the parties' positions after filing the CRSR so the Court can consider whether to hold a hearing to resolve these issues. If the

<sup>&</sup>lt;sup>1</sup> This supersedes the March 7, 2022 Standing Order Regarding Notice of Readiness for Patent Cases.

parties do not have any pre-Markman issues needing resolution, then the parties need not email the CRSR to the Court.

The Case Management Conference ("CMC") shall be deemed to occur 14 days after the filing date of the CRSR. If the CRSRs in CRSR Related Cases are not all submitted on the same date, the CMC shall be deemed to occur 14 days after the last CRSR in those CRSR Related Cases is filed. The Court intends to coordinate the CRSR Related Cases on the same schedule with a single *Markman* hearing, so the parties should plan accordingly. In all cases, the *Markman* hearing shall be initially scheduled for 23 weeks after the CMC and should be included in the parties' proposed Scheduling Order in accordance with this Order.

### II. GENERAL DEADLINES

The following deadlines apply:

- 1. Patent cases shall be set for a Rule 16 CMC in accordance with the preceding section.
- 2. Not later than 7 days before the CMC. The plaintiff shall serve preliminary infringement contentions chart setting forth where in the accused product(s) each element of the asserted claim(s) are found. The plaintiff shall also identify the priority date (*i.e.*, the earliest date of invention) for each asserted claim and produce: (1) all documents evidencing conception and reduction to practice for each claimed invention, and (2) a copy of the file history for each patent in suit.
- 3. Two weeks after the CMC. The parties shall file a **motion** to enter an agreed Scheduling Order that generally tracks the exemplary schedule attached as Exhibit A to this OGP, which should suit most cases. If the parties cannot agree, the parties shall submit a joint motion for entry of a Scheduling Order briefly setting forth their scheduling disagreement. Absent agreement of the parties, the plaintiff shall be responsible for the timely submission of this and other joint filings. When filing any Scheduling Order, the parties shall also jointly send an editable copy to the Court's law clerk.
- 4. Seven weeks after the CMC. The defendant shall serve preliminary invalidity contentions in the form of (1) a chart setting forth where in the prior art references each element of the asserted claim(s) are found, (2) an identification of any limitations the defendant contends are indefinite or lack written description under § 112, and (3) an identification of any claims the defendant contends are directed to ineligible subject matter under § 101. The § 101 contention shall (1) identify the alleged abstract idea, law of nature, and/or natural phenomenon in each challenged claim; (2) identify each claim element alleged to be well-understood, routine, and/or conventional; and (3) to the extent not duplicative of §§ 102/103 prior art contentions, prior art for the contention that claim elements are well-understood, routine, and/or conventional. The defendant shall also produce (1) all prior art referenced in the invalidity contentions, and (2) technical

documents, including software where applicable, sufficient to show the operation of the accused product(s).<sup>2</sup>

#### III. GENERAL DISCOVERY LIMITS

Except with regard to venue, jurisdictional, and claim construction-related discovery, all other discovery shall be stayed until after the *Markman* hearing. Notwithstanding this general stay of discovery, the Court will permit limited discovery by agreement of the parties, or upon request, where exceptional circumstances warrant it. For example, if discovery outside the United States is contemplated via the Hague, the Court is inclined to allow such discovery to commence before the *Markman* hearing.

Following the *Markman* hearing, the following discovery limits apply. The Court will consider reasonable requests to adjust these limits should circumstances warrant.

1. Interrogatories: 30 per side<sup>3</sup>

Requests for Admission: 45 per side
 Requests for Production: 75 per side

4. Fact Depositions: 70 hours per side (for both party and non-party witnesses combined)

5. Expert Depositions: 7 hours per report<sup>4</sup>

<u>Electronically Stored Information</u>. As a preliminary matter, the Court will not require general search and production of email or other electronically stored information (ESI) related to email (such as metadata), absent a showing of good cause. If a party believes targeted email/ESI discovery is necessary, it shall propose a procedure identifying custodians and search terms it believes the opposing party should search. The opposing party can oppose or propose an alternate plan. If the parties cannot agree, they shall contact the Court in accordance with the procedures below, to discuss their respective positions.

#### IV. DISCOVERY DISPUTES

<u>Standing Referral</u>. Under Rule 1 of the Local Rules for the Assignment of Duties to United States Magistrate Judges, Appendix C of the Local Court Rules of the United States District Court for the Western District of Texas, discovery disputes in patent cases pending before the

<sup>&</sup>lt;sup>2</sup> To the extent it may promote early resolution, the Court encourages the parties to exchange license and sales information, but any such exchange is optional during the pre-*Markman* phase of the case.

<sup>&</sup>lt;sup>3</sup> A "side" shall mean the plaintiff (or related plaintiffs suing together) on the one hand, and the defendant (or related defendants sued together) on the other hand. If the Court consolidates related cases for pretrial purposes, with regard to calculating limits imposed by this OGP, a "side" shall be interpreted as if the cases were proceeding individually. For example, in consolidated cases the plaintiff may serve up to 30 interrogatories on each defendant, and each defendant may serve up to 30 interrogatories on the plaintiff.

<sup>&</sup>lt;sup>4</sup> For example, if a single technical expert submits reports on both infringement and invalidity, he or she may be deposed for up to 14 hours in total.

undersigned are referred to United States Magistrate Judge Derek T. Gilliland for a determination under 28 U.S.C. § 636(b)(1)(A).

<u>Procedure.</u> A party may not file a Motion to Compel discovery unless: (1) lead counsel with decision making authority have met and conferred in good faith to try to resolve the dispute, and (2) the party has contacted the Court's law clerk to summarize the dispute and the parties' respective positions. When contacting the Court's law clerk for discovery or procedural disputes, the following procedures shall apply.

If the parties remain at an impasse after lead counsel have met and conferred, the requesting party shall email a summary of the issue(s) and specific relief requested to all counsel of record. The summary of the issue shall not exceed 500 words for one issue or a combined 1,000 words for multiple issues. The responding party has 3 business days<sup>6</sup> thereafter to provide an email response, also not to exceed 500 words for one issue or a combined 1,000 words for multiple issues. The specific relief requested should propose the exact language to be issued in a court order for each part of every disputed issue. The specific relief requested does not count toward the word limits. The Court encourages the parties to provide their submission in a Word document in the following table format, which clearly identifies the disputed issues and specific relief requested.

# Example:

Issue	Requesting Party's Position	Responding Party's Position
RFP 1: All sale records of the Product.	Responding Party didn't produce anything. Responding Party keeps its sales records in a sales database.	We found no sales records of the Product in the sales database.
the Froduct.	Relief: Order that "Responding Party must produce a copy of the sales database within 7 days."	Relief: Find that "no documents responsive to RFP 5 exist" and deny Requesting Party's relief.
ROG 5: Identify all employees who worked on the Product.	Responding Party only identified a subset of the employees.  Relief: Order that "Responding Party is compelled to fully respond to ROG 5 by identifying the names and locations of the remaining	We identified the relevant employees. The other employees are not relevant, and it is too burdensome to identify every employee.  Relief: Order that "Responding Party need not identify any other employees in response to ROG 5."

<sup>&</sup>lt;sup>5</sup> The procedure outlined below is also the Court's preferred mechanism for handling disputes regarding procedural matters such as extensions of time, excess pages, narrowing claims and prior art, amending invalidity and infringement contentions, etc. If the parties are unsure about whether a particular dispute should be handled by motion or discovery dispute procedure, they should contact the Court's clerks.

<sup>&</sup>lt;sup>6</sup> Business days exclude weekends and federal holidays.

employees who worked on Product by [date]."
1 7

Once the opposing party provides its response, the requesting party shall email the summaries of the issues to the Court's law clerks for both Judge Albright and Judge Gilliland with opposing counsel copied. If a hearing is requested, the parties shall indicate in the email whether any confidential information will be presented. Thereafter, the Court will provide guidance to the parties regarding the dispute or arrange a Zoom or in-person hearing.

Written Order.<sup>7</sup> Within 7 days of the discovery hearing, the parties shall email a joint proposed order to the Court's law clerk that includes the parties' positions from their dispute chart, the parties' requested relief, and the parties' understanding of the Court's ruling so that the arguments and outcome can be docketed. Parties shall send an editable version of the proposed order to the Court's law clerk with any disputed language in red and blue text. Failure to provide a proposed written order for the docket results in waiver of the dispute for appeal.

# V. <u>VENUE & JURISDICTIONAL DISCOVERY</u>

The Court hereby<sup>8</sup> establishes the following presumptive limits on discovery related to venue and jurisdiction: each party is limited to 5 interrogatories, 10 Requests for Production, and 10 hours of deposition testimony. The time to respond to such discovery requests is reduced to 20 days. If a party believes these limits should be expanded, the party shall meet and confer with opposing counsel and, if an impasse is reached, the requesting party is directed to contact the Court's law clerk for a telephonic hearing.

Venue or jurisdictional discovery automatically opens upon the filing of an initial venue or jurisdictional motion and shall be completed no later than 10 weeks after the filing of such motion. Parties shall file a notice of venue or jurisdictional discovery if the discovery will delay a response to a transfer or jurisdictional motion.

# VI. MOTIONS FOR TRANSFER

This section applies to all cases filed on or after March 7, 2022. Otherwise, the Second Amended Standing Order Regarding Motions for Inter-District Transfer controls earlier-filed cases.

A motion to transfer anywhere shall be filed within 3 weeks after the CMC or within 8 weeks of receiving or waiving service of the complaint, whichever is later. Thereafter, a movant must show good cause for any delay and seek leave of court. The deadline for plaintiff's response is 2 weeks after the completion of venue or jurisdictional discovery. The deadline for Defendant's reply is 2 weeks after the filing of the response.

<sup>&</sup>lt;sup>7</sup> This supersedes the June 17, 2021 Standing Order for Discovery Hearings in Patent Cases.

<sup>&</sup>lt;sup>8</sup> This supersedes the June 8, 2021 Amended Standing Order Regarding Venue and Jurisdictional Discovery Limits for Patent Cases.

The following page limits and briefing schedule apply to motions to transfer:

- 1. Opening 15 pages
- 2. Response 15 pages, due 14 days after the completion of venue or jurisdictional discovery, if such discovery is conducted; otherwise, 14 days after the Opening brief
- 3. Reply 5 pages, due 14 days after the Response brief

All parties who have filed a motion to transfer shall provide the Court with a status report indicating whether the motion has been fully briefed at each of the following times: 1) when the motion to transfer becomes ready for resolution;; 2) at 4 weeks before the *Markman* hearing date if the motion to transfer remains unripe for resolution; and 3) if there are multiple *Markman* hearings, the status report is due 6 weeks before the first scheduled *Markman* hearing. In addition, if by 1 week before the *Markman* hearing the Court has not ruled on any pending motion to transfer, the moving party is directed to email the Court's law clerk (and the technical advisor, when appointed), and indicate that the motion to transfer is pending.

If a motion to transfer remains pending, the Court will either promptly resolve the pending motion before the *Markman* hearing, or postpone the *Markman* hearing. Whenever a *Markman* hearing is postponed pursuant to this OGP (*e.g.*, because the transfer motion has not yet ripened or only recently ripened), Fact Discovery will begin one day after the originally scheduled *Markman* hearing date.

# VII. <u>MEET AND CONFER REQUIREMENT FOR</u> <u>EARLY MOTIONS TO DISMISS INDIRECT AND WILLFUL INFRINGEMENT</u>

Any party seeking to dismiss claims of indirect or willful infringement before fact discovery must first meet and confer with the opposing party to discuss dismissing those allegations without prejudice, with leave to re-plead those allegations with specificity if supported by a good faith basis under Rule 11. Under this agreement, the patent owner may re-plead those allegations within three months after fact discovery opens, and the parties agree to permit fact discovery on indirect and willful infringement during those three months. The party moving to dismiss must attach a certification of compliance with this OGP to its motion to dismiss.

An agreement to dismiss under this section shall be filed as a joint notice instead of as a motion.

# VIII. <u>INTERIM PROTECTIVE ORDER</u>

The Court provides a Model Protective Order on its website. Pending entry of the final Protective Order, the Court issues the following interim Protective Order to govern the disclosure of confidential information:

If any document or information produced in this matter is deemed confidential by the producing party and if the Court has not entered a protective order, until a protective order is issued by the Court, the document shall be marked "confidential" or with some other confidential designation (such as "Confidential – Outside Attorneys' Eyes Only") by the disclosing party and disclosure of the confidential document or information shall

be limited to each party's outside attorney(s) of record and the employees of such outside attorney(s).

If a party is not represented by an outside attorney, disclosure of the confidential document or information shall be limited to one designated "in house" attorney, whose identity and job functions shall be disclosed to the producing party 5 days prior to any such disclosure, in order to permit any motion for protective order or other relief regarding such disclosure. The person(s) to whom disclosure of a confidential document or information is made under this OGP shall keep it confidential and use it only for purposes of litigating the case.

#### IX. CLAIM CONSTRUCTION

### **Limits for Number of Claim Terms to be Construed**

<u>Terms for Construction</u>. Based on the Court's experience, the Court believes that it should have presumed limits on the number of claim terms to be construed. The "presumed limit" is the maximum number of terms that each side may request the Court to construe without further leave of Court. If the Court grants leave for additional terms to be construed, depending on the complexity and number of terms, the Court may split the *Markman* hearing into multiple hearings.

The presumed limits based on the number of patents-in-suit are as follows:

1-2 Patents	3-5 Patents	More than 5 Patents
8 terms	10 terms	12 terms

When the parties submit their joint claim construction statement, in addition to the term and the parties' proposed constructions, the parties should indicate which party or side proposed that term, or if that was a joint proposal.

#### **Briefing Procedure and Page Limits**

The Court will require non-simultaneous *Markman* briefing with the following default page limits. When exceptional circumstances warrant, the Court will consider reasonable requests to adjust these limits. These page limits shall also apply collectively for coordinated and consolidated cases; however, the Court will consider reasonable requests to adjust page limits in consolidated cases where circumstances warrant. The Court has familiarity with the law of claim construction and encourages the parties to forego lengthy recitations of legal authorities and to instead focus on the substantive issues unique to each case.

Unless otherwise agreed to by the parties, the default order of terms in the parties' briefs shall be based on 1) the patent number (lowest to highest), the claim number (lowest to highest), and order of appearance within the lowest number patent and claim. An example order may be as follows:

1. 10,000,000 Patent, Claim 1, Term 1

- 2. 10,000,000 Patent, Claim 1, Term 2 (where Term 2 appears later in the claim than does Term 1)
- 3. 10,000,000 Patent, Claim 2, Term 3 (where Term 3 appears later in the claim than does Terms 2 and 3)
- 4. 10,000,001 Patent, Claim 1, Term 4
- 5. 10,000,001 Patent, Claim 3, Term 5
- 6. 10,000,002 Patent, Claim 2, Term 6

If the same or similar terms appear in multiple claims, those same or similar terms should be ordered according to the lowest patent number, lowest claim number, and order of appearance within the patent and claim.

Brief	1-2 Patents	3-5 Patents	More than 5 Patents
Opening (Defendant)	20 pages	30 pages	30 pages, plus 5 additional pages for each patent over 5 up to a maximum of 45 pages
Response (Plaintiff)	20 pages	30 pages	30 pages, plus 5 additional pages for each patent over 5 up to a maximum of 45 pages
Reply (Defendant)	10 pages	15 pages	15 pages, plus 2 additional pages for each patent over 5 up to a maximum of 21 pages
Sur-Reply (Plaintiff)	10 pages	15 pages	15 pages, plus 2 additional pages for each patent over 5 up to a maximum of 21 pages

After briefing concludes, the parties shall file a Joint Claim Construction Statement and email an editable copy to the Court's law clerks.

### Technology Tutorials and Conduct of the Markman Hearing

Technology tutorials are optional, especially in cases where a technical advisor has been appointed. If the parties submit one, the tutorial should be in electronic form, with voiceovers, and submitted at least 10 days before the *Markman* hearing. In general, tutorials should be: (1) directed to the underlying technology (rather than argument related to infringement or validity), and (2) limited to 15 minutes per side. The tutorial will not be part of the record and the parties may not rely on or cite to the tutorial in other aspects of the litigation.

The Court generally sets aside one hour for the *Markman* hearing; however, the Court is open to reserving more or less time, depending on the complexity of the case and input from the parties. As a general rule, the party opposing the Court's preliminary construction shall go first. If both parties oppose the Court's preliminary construction, the plaintiff shall typically go first.

The Court will provide preliminary constructions to the parties ahead of the *Markman* hearing. At the *Markman* hearing, the Court encourages oral arguments that fine-tune the preliminary constructions over arguments repeated from the briefs.

#### X. GENERAL ISSUES

- 1. The Court will entertain reasonable requests to streamline the case schedule and discovery. The Parties should contact the Court's law clerk when a change might help streamline the case.
- 2. The Court is generally willing to extend the response to the Complaint up to 45 days if agreed by the parties. Extensions beyond 45 days from the original answer date are disfavored and require a motion.
- 3. Speaking objections during depositions are improper. Objections during depositions shall be stated concisely and in a nonargumentative and nonsuggestive manner. Examples of permissible objections include: "Objection, leading," "Objection, compound," "Objection, vague." Other than to evaluate privilege issues, counsel should not confer with a witness while a question is pending. Counsel may confer with witnesses during breaks in a deposition without waiving any otherwise applicable privilege.
- 4. Within 10 days of any new changes relevant to AO 120 (Report on the Filing or Determination of an Action Regarding a Patent or Trademark), the Plaintiff must update the form with any new changes to the case such as amended complaints or new claims.
- 5. Plaintiff must file a notice informing the Court when an IPR is filed, the expected time for an institution decision, and the expected time for a final written decision, within 2 weeks of the filing of the IPR.
- 6. After the trial date is set, the Court will not move the trial date except in extreme situations. If a party believes that the circumstances warrant continuing the trial date, the parties are directed to contact the Court's law clerk.
- 7. Appendix C, Order on Motions *in Limine* (MILs), shall apply equally to all parties. In addition to the standard MILs, each party will be permitted to propose and argue (if opposed) up to five (5) of its own MILs at the Pretrial Conference. MILs outside these limits will not be considered. MILs that are multifarious so as to exceed the above limitations will also not be considered. MILs that simply restate the rules of evidence or other legal principles or that are more appropriately motions for summary judgment or *Daubert* motions are improper.

- 8. The Court does not limit the number of motions for summary judgment (MSJs) or *Daubert* motions<sup>9</sup> a party may file. However, absent leave of Court, the cumulative page limit for opening briefs for all MSJs is 40 pages per side, for all *Daubert* motions is 40 pages per side, and for all MILs is 15 pages per side. Each responsive MSJ, *Daubert*, and MIL brief is limited to the pages utilized in the opening brief or by the local rules, whichever is greater; and the cumulative pages for responsive briefs shall be no more than cumulative pages utilized in the opening briefs. Reply brief page limits shall be governed by the local rules, but in no event shall the cumulative pages of reply briefs exceed 20 pages per side for all MSJs, 20 pages per side for all *Daubert* motions, and 10 pages for all MILs.
- 9. The Court no longer requires physical copies of *Markman* briefs, summary judgment motions, and *Daubert* motions. Instead, the parties shall jointly contact the Court's law clerk, at least ten days before the hearing, for a Box link to provide an electronic copy of the briefs, <sup>10</sup> exhibits, and the optional technology tutorial. <sup>11</sup> Absent agreement to the contrary, the plaintiff shall be responsible for providing the electronic copies via Box. For *Markman* briefs, the parties should also include a copy of all patents-in-suit and an editable copy of the Joint Claim Construction Statement. If the Court appoints a technical advisor, each party shall deliver the same to the technical advisor on a USB drive, also 10 days before the hearing.
- 10. When filing the Joint Claim Construction Statement, proposed Protective Order, or proposed Scheduling Order, the parties shall also email the Court's law clerk a Word version of the filed documents.
- 11. For all non-dispositive motions, the parties shall submit a proposed Order. The proposed Order shall omit the word "Proposed" from the title.
- 12. For non-private remote hearings in front of Judge Albright, the public is allowed to attend via the call-in information below. However, the public shall not attempt to access video of those hearings and anyone found not to be in compliance is subject to sanctions by the Court.
  - +16692545252,,1613131172#,,,,\*120804# US (San Jose) +16468287666,,1613131172#,,,,\*120804# US (New York)
- 13. Any party who intends to present confidential information in a remote hearing shall email and notify the Court's law clerk to request a private Zoom setup that will not be publicly broadcasted.
- 14. When citing cases or exhibits in a motion, parties shall pin cite the relied-upon section of a case or exhibit. For any motion referencing an expert report (e.g., motions to strike, Daubert

<sup>&</sup>lt;sup>9</sup> This includes any motion filed after opening expert reports that seeks to strike or preclude the use of any part of an expert report for any reason, including procedural reasons.

<sup>&</sup>lt;sup>10</sup> But if the Court appoints a technical advisor for claim construction, the parties should not provide a copy of the *Markman* briefs to the Court.

<sup>&</sup>lt;sup>11</sup> The Court can no longer receive USB drives due to security concerns, but the technical advisors can.

motions, and summary judgment motions), the Court requires full copies of the expert report attached as an exhibit. The Court encourages parties to highlight and/or annotate the relied-upon sections of exhibits or expert reports (*e.g.*, patents, transcripts, contracts) to facilitate the Court's analysis of the motion. A supporting declaration should identify if any exhibit is highlighted or annotated.

- 15. Parties shall promptly notify the Court if they reach a settlement in a case and request to stay any deadlines.
- 16. When filing a patent case, the Plaintiff shall file a "Notice of Related Cases" on the day of filing the patent case. For the Notice of Related Cases, cases shall be considered "related" when they share at least one common asserted patent. <sup>12</sup> The Notice of Related Cases shall indicate the case caption, case number, and presiding Judge of any related case.
- 17. A pleading, motion, or other submission shall be typed or printed in 12-point or larger font (including footnotes), double-spaced, on paper sized 8½" x 11" with one-inch margins on all sides and shall be endorsed with the style of the case and the descriptive name of the document. Headings, footnotes, and quotations more than two lines long may be single-spaced.
- 18. With respect to calculating page limits for motions not otherwise addressed in this Order, such that Local Rule CV-7 applies, at least the following are examples of motions the Court considers to be "case management motions" where the 10-page limit shall apply: Motions to Stay, Motions for Continuance, and Motions to Amend Pleadings, Contentions, or Scheduling Orders.

### XI. TRIAL & POST-TRIAL ISSUES

- Preliminary and Final Jury Instructions with disputed language must include citations to prior
  jury instructions given by this Court. Parties shall send an editable version of the proposed
  instructions to the Court's law clerk with the disputed language in red and blue text.
  Instructions should exactly track the language of prior instructions to the extent possible.
  Language from the Court's most recent Jury Instructions is preferred.
- 2. Parties shall file a joint proposed final judgement within 14 days of a jury verdict. If one party disputes the language of the order, then that party shall send an editable version of the proposed order to the Court's law clerk with the disputed language in red and blue text. The Court discourages the parties from providing extensive substantive argument in the editable version of the proposed judgment.
- 3. On the same day that post-trial briefing is completed, the parties shall email the Court's law clerks with a list of the pending motions and request a hearing, if desired.

<sup>&</sup>lt;sup>12</sup> The CRSR and Notice of Related Cases use different definitions.

4. Prior to entering an order regarding post-trial bonds, parties are directed to reach out to the District Clerks Office to obtain specific information needed to complete the order. The Office can be reached at <a href="https://doi.org/10.1001/journal.org/10.1001/j

SIGNED this 23rd day of January, 2024.

ALAN D ALBRIGHT

UNITED STATES DISTRICT JUDGE

# XII. <u>APPENDIX A – EXEMPLARY SCHEDULE</u>

Deadline	Item
8 weeks after receiving or waiving service of complaint or 3 weeks after the CMC, whichever is later.	Deadline to file a motion to transfer. After this deadline, movants must seek leave of Court and show good cause for the delay.
7 days before CMC	Plaintiff serves preliminary <sup>13</sup> infringement contentions in the form of a chart setting forth where in the accused product(s) each element of the asserted claim(s) are found. Plaintiff shall also identify the earliest priority date ( <i>i.e.</i> , the earliest date of invention) for each asserted claim and produce: (1) all documents evidencing conception and reduction to practice for each claimed invention, and (2) a copy of the file history for each patent in suit.
2 weeks after CMC	The Parties shall file a motion to enter an agreed Scheduling Order. If the parties cannot agree, the parties shall submit a separate Joint Motion for entry of Scheduling Order briefly setting forth their respective positions on items where they cannot agree. Absent agreement of the parties, the Plaintiff shall be responsible for the timely submission of this and other Joint filings.
7 weeks after CMC	Defendant serves preliminary invalidity contentions in the form of (1) a chart setting forth where in the prior art references each element of the asserted claim(s) are found, (2) an identification of any limitations the Defendant contends are indefinite or lack written description under section 112, and (3) an identification of any claims the Defendant contends are directed to ineligible subject matter under section 101.  Defendant shall also produce (1) all prior art referenced in the invalidity contentions, and (2) technical documents, including software where applicable, sufficient to show the operation of the accused product(s).

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<sup>&</sup>lt;sup>13</sup> The parties may amend preliminary infringement contentions and preliminary invalidity contentions without leave of court so long as counsel certifies that it undertook reasonable efforts to prepare its preliminary contentions and the amendment is based on material identified after those preliminary contentions were served and should do so seasonably upon identifying any such material. Any amendment to add patent claims requires leave of court so that the Court can address any scheduling issues.

9 weeks after CMC	Parties exchange claim terms for construction.
11 weeks after CMC	Parties exchange proposed claim constructions.
12 weeks after CMC	Parties disclose extrinsic evidence. The parties shall disclose any extrinsic evidence, including the identity of any expert witness they may rely upon with respect to claim construction or indefiniteness. With respect to any expert identified, the parties shall identify the scope of the topics for the witness's expected testimony. With respect to items of extrinsic evidence, the parties shall identify each such item by production number or produce a copy of any such item if not previously produced.
13 weeks after CMC	Deadline to meet and confer to narrow terms in dispute and exchange revised list of terms/constructions.
14 weeks after CMC	Defendant files Opening claim construction brief, including any arguments that any claim terms are indefinite.
17 weeks after CMC	Plaintiff files Responsive claim construction brief.
19 weeks after CMC	Defendant files Reply claim construction brief.
19 weeks after CMC	Parties to jointly email the law clerks (see OGP at 1) to confirm their <i>Markman</i> date and to notify if any venue or jurisdictional motions remain unripe for resolution.
21 weeks after CMC	Plaintiff files a Sur-Reply claim construction brief.
3 business days after submission of sur-reply	Parties submit Joint Claim Construction Statement and email the law clerks an editable copy.  See General Issues Note #9 regarding providing copies of the briefing to the Court and the technical advisor (if appointed).
22 weeks after CMC (but at least 10 days before <i>Markman</i> hearing)	Parties submit optional technical tutorials to the Court and technical advisor (if appointed).

Any party may utilize a rebuttal expert in response to a brief where expert testimony is relied upon by the other party.

23 weeks after CMC (or as soon as practicable) <sup>15</sup>	Markman Hearing at 9:00 a.m. This date is a placeholder and the Court may adjust this date as the Markman hearing approaches.
1 business day after Markman hearing	Fact Discovery opens; deadline to serve Initial Disclosures per Rule 26(a).
6 weeks after <i>Markman</i> hearing	Deadline to add parties.
8 weeks after <i>Markman</i> hearing	Deadline to serve Final Infringement and Invalidity Contentions. After this date, leave of Court is required for any amendment to infringement or invalidity contentions. This deadline does not relieve the parties of their obligation to seasonably amend if new information is identified after initial contentions.
16 weeks after Markman hearing	Deadline to amend pleadings. A motion is not required unless the amendment adds patents or patent claims. (Note: This includes amendments in response to a 12(c) motion.)
26 weeks after Markman	Deadline for the first of two meet and confers to discuss significantly narrowing the number of claims asserted and prior art references at issue. Unless the parties agree to the narrowing, they are ordered to contact the Court's law clerk to arrange a teleconference with the Court to resolve the disputed issues.
30 weeks after <i>Markman</i> hearing	Close of Fact Discovery.
31 weeks after <i>Markman</i> hearing	Opening Expert Reports.
35 weeks after <i>Markman</i> hearing	Rebuttal Expert Reports.
38 weeks after <i>Markman</i> hearing	Close of Expert Discovery.
39 weeks after <i>Markman</i> hearing	Deadline for the second of two meet and confers to discuss narrowing the number of claims asserted and prior art references at issue to triable limits. If it helps the parties determine these limits, the parties are encouraged to contact

 $^{15}$  All deadlines hereafter follow the original Markman hearing date and do not change if the Court delays the Markman hearing.

	the Court's law clerk for an estimate of the amount of trial time anticipated per side. The parties shall file a Joint Report within 5 business days regarding the results of the meet and confer.
40 weeks after <i>Markman</i> hearing	Dispositive motion deadline and <i>Daubert</i> motion deadline.  See General Issues Note #9 regarding providing copies of the briefing to the Court and the technical advisor (if appointed).
	Deadline for parties desiring to consent to trial before the magistrate judge to submit Form AO 85, "Notice, Consent, And Reference Of A Civil Action To A Magistrate Judge," available at <a href="https://www.uscourts.gov/forms/civil-forms/notice-consent-and-reference-civil-action-magistrate-judge">https://www.uscourts.gov/forms/civil-forms/notice-consent-and-reference-civil-action-magistrate-judge</a> .
42 weeks after <i>Markman</i> hearing	Serve Pretrial Disclosures (jury instructions, exhibits lists, witness lists, deposition designations).
44 weeks after <i>Markman</i> hearing	Serve objections to pretrial disclosures/rebuttal disclosures.
45 weeks after <i>Markman</i> hearing	Serve objections to rebuttal disclosures; file motions in limine.
46 weeks after Markman hearing	File Joint Pretrial Order and Pretrial Submissions (jury instructions, exhibits lists, witness lists, deposition designations); file oppositions to motions <i>in limine</i> From this date onwards, the parties are obligated to notify the Court of any changes to the asserted patents or claims. Such notification shall be filed on the docket within seven (7) days of the change and shall include a complete listing of all asserted patents and claims. If a change to the asserted patents or claims requires leave of court (for example, if a party is moving for leave to assert additional claims), notification shall not be required until the Court grants leave, at which point the notification must be filed within seven (7) days.
47 weeks after <i>Markman</i> hearing	File Notice of Request for Daily Transcript or Real Time Reporting. If a daily transcript or real time reporting of court proceedings is requested for trial, the party or parties making said request shall file a notice with the Court and email the Court Reporter, Kristie Davis at kmdaviscsr@yahoo.com
	Deadline to file replies to motions in limine.

48 weeks after <i>Markman</i> hearing	Deadline to meet and confer regarding remaining objections and disputes on motions <i>in limine</i> .
8 weeks before trial	Parties to jointly email the Court's law clerk (See OGP at 1) to confirm their pretrial conference and trial dates.
3 business days before Final Pretrial Conference.	File joint notice identifying remaining objections to pretrial disclosures and disputes on motions <i>in limine</i> .
49 weeks after <i>Markman</i> hearing (or as soon as practicable)	Final Pretrial Conference. Held in person unless otherwise requested.
52 weeks after <i>Markman</i> hearing (or as soon as practicable) <sup>16</sup>	Jury Selection/Trial.

<sup>16</sup> If the actual trial date materially differs from the Court's default schedule, the Court will consider reasonable amendments to the case schedule post-*Markman* that are consistent with the Court's default deadlines in light of the actual trial date.

#### XIII. <u>APPENDIX B – EXEMPLARY CASE READINESS STATUS REPORT</u>

# UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS WACO DIVISION

[Plaintiff],

Plaintiff

V.

[Defendant],

Defendant

# **CASE READINESS STATUS REPORT**

Plaintiff [names] and Defendant [name(s)], hereby provide the following status report.

# **SCHEDULE**

A scheduling order [has been proposed and awaits entry by the Court, has been issued by the Court, or has not yet been filed].

[Indicate if a *Markman* date has been set, proposed, or not yet proposed.]

[Indicate if a trial date has been set, proposed, or not yet proposed.]

#### FILING AND EXTENSIONS

Plaintiff's Complaint was filed on [filing date]. There have been [one/two] extension[s] for a total of days.

# **RESPONSE TO THE COMPLAINT**

[Indicate if/when the Defendant(s) responded to the Complaint, whether it was an Answer or Motion, and whether any counterclaims were filed other than counterclaims for non-infringement or invalidity]

# **PENDING MOTIONS**

[Identify all pending motions]

# RELATED CASES IN THIS JUDICIAL DISTRICT

[Identify all related cases in this Judicial District, including any other cases where a common patent is asserted]

### IPR, CBM, AND OTHER PGR FILINGS

[There are no known IPR, CBM, or other PGR filings.] [Or]
[ALT: IPR2021-00000 was filed on and docketed on An institution decision
expected on or before A Final Written decision is expected on or before]
NUMBER OF ASSERTED PATENTS AND CLAIMS
Plaintiff has asserted [Num Patents] patent[s] and a total of [Num Claims] claims. The
asserted patent(s) are U.S. Patent Nos

[If a Plaintiff has already served Preliminary Infringement Contentions ("PICs"), note the date of service. Note: Per the Court's Order Governing Proceeding, Plaintiff must serve PICs no later than 7 days before the CMC]

# APPOINTMENT OF TECHNICAL ADVISOR

[Indicate if the Parties request, oppose, or defer to the Court on whether to appoint a technical advisor to the case to assist the Court with claim construction or other technical issues]

#### **MEET AND CONFER STATUS**

Plaintiff and Defendant met and conferred. [The Parties have no pre-Markman issues to raise at the CMC.] or [The Parties identified the following pre-Markman issues to raise at the CMC [list].]

Dated:	Respectfully Submitted
	/s/

### XIV. <u>APPENDIX C – STANDARD MOTIONS IN LIMINE ORDER</u>

### IN THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS WACO DIVISION



#### **ORDER ON MOTIONS IN LIMINE**

The Court issues this Order *sua sponte*. To allow for reasonable and relevant *limine* practice as part of the Pretrial Conference, the Court imposes the following set of standard *limine* rulings to be applied mutually to both parties. In addition to these *limine* orders, each party will be permitted to propose and argue (if opposed) up to five (5) of its own motions *in limine* at the Pretrial Conference. *Limine* motions outside these limits will not be considered. *Limine* motions that are multifarious so as to exceed the above limitations will also not be considered. MILs that simply restate the rules of evidence or other legal principles or that are more appropriately motions for summary judgment or *Daubert* motions are improper.

It is therefore **ORDERED** that the Parties, their witnesses, and counsel shall not raise, discuss, or argue the following before the venire panel or the jury without prior leave of the Court:

Court MIL No. 1: The parties shall be precluded from introducing evidence, testimony, or argument regarding pretrial proceedings or issues including but not limited to discovery disputes or dispositive motion practice.

Court MIL No. 2: The parties shall be precluded from introducing evidence, testimony, or argument that raises religious or political beliefs,

race, ethnicity, gender, national origin, sexual orientation, or health (including but not limited to vaccination status) of a party, witness, attorney, or law firm.

- Court MIL No. 3: The parties shall be precluded from introducing evidence, testimony, or argument concerning any party's overall financial size, wealth, or executive compensation.
- Court MIL No. 4: The parties shall be precluded from introducing evidence, testimony, or argument regarding prior art that is not disclosed in a specific combination set forth in any party's expert report or invalidity contentions.
- Court MIL No. 5: The parties shall be precluded from introducing evidence, testimony, or argument before the jury that relates only to equitable defenses or counterclaims (i.e., evidence that does not also serve another evidentiary purpose relevant to jury issues).
- Court MIL No. 6: The parties shall be precluded from introducing evidence, testimony, or argument concerning the Patent Trial and Appeal Board, inter partes review, the Smith-Leahy America Invents Act, or any alternative structure that does not relate directly to an Article III trial in a district court.
- Court MIL No. 7: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that there is anything legally improper in filing a patent application or writing patent claims to cover an adverse party's product.
- Court MIL No. 8: The parties shall be precluded from introducing any argument, evidence, testimony, insinuation, reference, or assertion regarding a witness' choice to testify in his or her native or chosen language (being any language other than English).
- Court MIL No. 9: The parties shall be precluded from introducing evidence, testimony, or argument referring to any other person or entity as "greedy," "corrupt," "evil," or "dishonest," or using any other pejorative term. The parties shall also be precluded from introducing evidence, testimony, or argument that characterizes any other person or entity's actions as "stealing," "copying,"

"misappropriating," "pirating," "trespassing," or any similar terms.

- Court MIL No. 10: The parties shall be precluded from introducing evidence, testimony, or argument bolstering or disparaging the U.S. Patent Office, its examiners, or the process for prosecuting patent applications or granting patents in the United States. This does not preclude factual evidence as to the operations of the USPTO.
- Court MIL No. 11: The parties shall be precluded from introducing evidence, testimony, or argument referring to any other person or entity in disparaging ways, such as a "patent troll," "pirate," "bounty hunter," "bandit," "playing the lawsuit lottery," "shell company," "shakedown artist," "patent assertion entity," or any such similar terms. Use of the term "non-practicing entity" is permitted.
- Court MIL No. 12: The parties shall be precluded from introducing evidence, testimony, or argument regarding funding of the litigation or regarding any comment on attorney-fee compensation including amounts or structure.
- Court MIL No. 13: The parties shall be precluded from introducing evidence, testimony, or argument regarding either party's other litigations or arbitrations, including parallel proceedings in any other court, tribunal, or forum, including ADR proceedings.
- Court MIL No. 14: The parties shall be precluded from introducing evidence, testimony, or argument regarding the size of the parties' law firms or the number of attorneys representing the parties.
- Court MIL No. 15: The parties shall be precluded from introducing evidence, testimony, or argument regarding the fact that testimony or opinions offered by any expert may have been criticized, excluded, or found to be unreliable in any other forum.
- Court MIL No. 16: The parties shall be precluded from introducing evidence, testimony, or argument referring to the role or presence in the courtroom of jury consultants or shadow jurors, or the use of

focus groups or mock proceedings to assist with trial preparation, jury selection, or trial.

- Court MIL No. 17: The parties shall be precluded from introducing evidence, testimony, or argument relating to the Court's Claim Construction Order other than the Court's actual adopted constructions, including the Court's reasoning or the parties' agreements.
- Court MIL No. 18: The parties shall be precluded from introducing evidence, testimony, or argument for purposes of non-infringement comparing the accused product or method to the preferred embodiments, the specification, or any non-accused product or method.
- Court MIL No. 19: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that a verdict in one party's favor would impact the cost of goods or services or would have other commercial impacts.
- Court MIL No. 20: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that the Western District of Texas is an improper or inconvenient venue in which to try this case.
- Court MIL No. 21: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that the other party had an affirmative duty to seek opinion of counsel, and/or any inference that may be drawn as to what the contents of such an opinion would have been.
- Court MIL No. 22: Neither party will ask questions or make statements to invoke a privileged or protected answer, including any materials that are privileged, or that have been presented outside of the jury to establish/prevent a finding of privilege.
- Court MIL No. 23: No expert witness may testify to expert opinions outside the established parameters of her/his expert report, and counsel shall not raise such an objection for strategic or other non-meritorious purposes.

## Exhibit B

### IN THE UNITED STATES DISTRICT COURT FOR THE EASTERN DISTRICT OF TEXAS MARSHALL DIVISION

,		§ § §	
V.	Plaintiff,	§ §	
,		§ § 8	CIVIL ACTION NO. 2: -CV-00-JRG
		§ §	
	Defendant.	§ §	

# STANDING ORDER ON MOTIONS IN LIMINE IN CASES ASSIGNED TO CHIEF JUDGE RODNEY GILSTRAP INVOLVING ALLEGATIONS OF PATENT INFRINGEMENT AND/OR BREACH OF FRAND OBLIGATIONS, AS WELL AS DECLARATORY JUDGMENT ACTIONS WHICH RELATE TO THE SAME

The Court imposes the following set of standard *limine* rulings to be applied to all parties. In addition to these *limine* orders, each party will be permitted to propose and argue (if opposed) up to five (5) of each parties' own motions *in limine* at the Pretrial Conference.

#### I. STANDARD LIMINE ORDERS

It is **ORDERED** that the Parties, their witnesses, and counsel shall not raise, discuss, or argue the following before the venire panel or the jury without prior leave of the Court:

Court MIL No. 1: The parties shall be precluded from introducing evidence, testimony, or argument regarding pretrial proceedings or issues including but not limited to discovery disputes, dispositive motion practice, or dropped claims or defenses.

Court MIL No. 2: The parties shall be precluded from introducing evidence, testimony, or argument that raises religious or political beliefs, race, ethnicity, gender, national origin, sexual orientation, or health (including but not limited to vaccination status) of a party, witness, attorney, or law firm.

Court MIL No. 3: The parties shall be precluded from introducing evidence, testimony, or argument concerning any party's overall financial size, wealth, or executive compensation.

- Court MIL No. 4: The parties shall be precluded from introducing evidence, testimony, or argument regarding prior art that is not disclosed in a specific combination set forth in any party's expert report or invalidity contentions.
- Court MIL No. 5: The parties shall be precluded from introducing evidence, testimony, or argument before the jury that relates only to equitable defenses or counterclaims (*i.e.*, evidence that does not also serve another evidentiary purpose relevant to jury issues).
- Court MIL No. 6: The parties shall be precluded from introducing evidence, testimony, or argument concerning the Patent Trial and Appeal Board, inter partes review, the Smith-Leahy America Invents Act, or any alternative structure that does not relate directly to an Article III trial in a district court.
- Court MIL No. 7: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that there is anything legally improper in filing a patent application or writing patent claims to cover an adverse party's product.
- Court MIL No. 8: The parties shall be precluded from introducing any argument, evidence, testimony, insinuation, reference, or assertion regarding a witness' choice to testify in his or her native or chosen language (being any language other than English).
- Court MIL No. 9: The parties shall be precluded from introducing evidence, testimony, or argument referring to any other person or entity as "greedy," "corrupt," "evil," or "dishonest," or using any other pejorative term. The parties shall also be precluded from introducing evidence, testimony, or argument that characterizes any other person or entity's actions as "stealing," "copying," "misappropriating," "pirating," "trespassing," or any similar terms.
- Court MIL No. 10: The parties shall be precluded from introducing evidence, testimony, or argument bolstering or disparaging the U.S. Patent Office, its examiners, or the process for prosecuting patent applications or granting patents in the United States. This does not preclude factual evidence as to the operations of the USPTO.
- Court MIL No. 11: The parties shall be precluded from introducing evidence, testimony, or argument referring to any other person or entity in disparaging ways, such as a "patent troll," "pirate," "bounty hunter," "bandit," "playing the lawsuit lottery," "shell company," "shakedown artist," "patent assertion entity," or any such similar terms. Use of the term "non-practicing entity" is permitted.
- Court MIL No. 12: The parties shall be precluded from introducing evidence, testimony, or argument regarding funding of the litigation or regarding any

	comment on attorney-fee compensation including amounts or structure.
Court MIL No. 13:	The parties shall be precluded from introducing evidence, testimony, or argument regarding either party's other litigations or arbitrations, including parallel proceedings in any other court, tribunal, or forum, including ADR proceedings.
Court MIL No. 14:	The parties shall be precluded from introducing evidence, testimony, or argument regarding the size of the parties' law firms or the number of attorneys representing the parties.
Court MIL No. 15:	The parties shall be precluded from introducing evidence, testimony, or argument regarding the fact that testimony or opinions offered by any expert may have been criticized, excluded, or found to be unreliable in any other forum.
Court MIL No. 16:	The parties shall be precluded from introducing evidence, testimony, or argument referring to the role or presence in the courtroom of jury consultants or shadow jurors, or the use of focus groups or mock proceedings to assist with trial preparation, jury selection, or trial.
Court MIL No. 17:	The parties shall be precluded from introducing evidence, testimony, or argument relating to the Court's Claim Construction Order other than the Court's actual adopted constructions, including the Court's reasoning or the parties' agreements.
Court MIL No. 18:	The parties shall be precluded from introducing evidence, testimony, or argument for purposes of non-infringement comparing the accused product or method to the preferred embodiments, the specification, or any non-accused product or method.
Court MIL No. 19:	The parties shall be precluded from introducing evidence, testimony, or argument suggesting that a verdict in one party's favor would impact the cost of goods or services or would have other commercial impacts.
Court MIL No. 20:	The parties shall be precluded from introducing evidence, testimony, or argument suggesting that the Eastern District of Texas is an improper or inconvenient venue in which to try this case.
Court MIL No. 21:	The parties shall be precluded from introducing evidence, testimony, or argument suggesting that the other party had an affirmative duty to seek opinion of counsel, and/or any inference that may be drawn as to what the contents of such an opinion would have been.
Court MIL No. 22:	Neither party will ask questions or make statements to invoke a privileged or protected answer, including any materials that are

establish/prevent a finding of privilege.

privileged, or that have been presented outside of the jury to

Court MIL No. 23: No expert witness may testify to expert opinions outside the established parameters of her/his expert report, and counsel shall not raise such an objection for strategic or other non-meritorious purposes.

<u>Court MIL No. 24</u>: Neither party shall reference the presence or absence of any party's corporate representative, employee, or other witness.

Court MIL No. 25: The parties shall be precluded from introducing evidence, testimony, or argument suggesting that the opposing party failed to call any witness. The parties shall also be precluded from making any mention or statement of probable testimony of a witness who is absent, unavailable, or will not be called or allowed to testify live or by deposition in this case. In short, neither party shall "try the empty chair."

UNITED STATES DISTRICT JUDGE

So ORDERED and SIGNED this 14th day of December, 2022.

4

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

NETGEAR, INC.,

Defendant.

C.A. No. 22-981-JLH (CONSOLIDATED)

JURY TRIAL DEMANDED

DEFENDANT NETGEAR, INC.'S OPPOSITION TO TRACKTHINGS LLC'S MOTION IN LIMINE NO. 2 TO EXCLUDE EVIDENCE, TESTIMONY, OR ARGUMENT REGARDING PRETRIAL PROCEEDINGS OR ISSUES

### TABLE OF EXHIBITS<sup>1</sup>

Ex. 1	Excerpted Opening Expert Report of Stephen A. Holzen Regarding Damages, dated January 25, 2024		
Ex. 2	Ex. 2 Excerpted Supplemental Expert Report of Stephen A. Holzen, dated March 13, 2025		
Ex. 3	Excerpted Transcript from the September 6, 2024 Deposition of Stephen Holzen		
Ex. 4	Excerpted Second Supplemental Expert Report of Stephen A. Holzen, dated May 9, 2025		

<sup>&</sup>lt;sup>1</sup> Full versions of Exs. 1 and 4 can be found at D.I. 248, Ex. 21 and D.I. 375, Ex. D, respectively.

The only disagreement NETGEAR has with TrackThings' Motion *in Limine* No. 2 is that NETGEAR must be able to discuss the two dismissed patents—the '017 and '893 patents—and the Court's finding that neither patent is infringed in order to effectively cross examine Mr. Holzen on his damages opinions. The effect of TrackThings' motion *in limine* otherwise would allow Mr. Holzen to testify to opinions that fundamentally intertwine the analysis for three patents, while preventing NETGEAR from probing the basis of those opinions on cross-examination. Evidence pertinent to cross-examination of an expert is both relevant and admissible. *See, e.g., Johns Hopkins Univ. v. Alcon Lab'ys*, 2018 WL 4178159, at \*7 (D. Del. Aug. 30, 2018); *Impax Lab'ys v. Lannett Holdings*, 2016 WL 9240617, at \*1 (D. Del. Aug. 24, 2016).

TrackThings had a choice in what damages theory to present, and it elected to pursue a damages theory that intractably intertwined the two previously asserted patents with the '442 patent. As a result, the two dismissed patents are part-and-parcel of virtually every stage of Mr. Holzen's analysis, and effective cross examination of Mr. Holzen must allow for discussion of those patents. These patents' significance is most readily apparent in Mr. Holzen's: (1) determination that the incremental value of the three patents was per unit (previously per unit); and (2) relative allocation of per unit (previously per unit) to the '442 patent.<sup>2</sup>

First, as NETGEAR has previously discussed (see D.I. 352, 374), Mr. Holzen originally opined that per unit was the incremental value of the '017, '893, and '442 patents together, assigning no value to any incremental improvements NETGEAR made in implementing a mesh WiFi system, nor any other functionality of mesh WiFi apart from the three TrackThings patents. (See Ex. 1 at ¶ 182.) Mr. Holzen then said in his Supplemental Report that per unit is instead

 $<sup>^2</sup>$  Mr. Holzen's numerical calculations changed solely to reflect his use of updated financial data; his methodology was unchanged. (Ex. 4 at  $\P$  8 n.16.)

Second, in both Mr. Holzen's original and his supplemental reports, Mr. Holzen performs a relative allocation of value from (previously) per unit down to (previously) per unit for the '442 patent. (Ex. 1 at ¶¶ 192-195; Ex. 2 at ¶ 15.) Mr. Holzen originally explained that this relative allocation was performed solely as a relative allocation among the three patents, without reference to the underlying technology. (Ex. 3 at 156:11-18 ("I'm using this survey in combination with the other surveys to understand the relative value of each patent to each other, but not relative to the entire value of the product. It's just what is the relative value between the patents, not the relative value of the patents to the ultimate product.").) Mr. Holzen now says the allocation is based on a comparison of the '442 patent to the underlying mesh WiFi technology or three specified features, but his calculation is unchanged. (See Ex. 2 at ¶ 15, Ex. 4 at ¶ 17.) Again, NETGEAR must be able to cross examine Mr. Holzen on why his opinion changed, and why he now believes that the relative allocation of the '442 patent to the underlying technology is precisely the same as what he previously opined was the relative allocation of the '442 patent solely among three patents.

Furthermore, the underlying basis for this opinion, even in the Supplements, is Mr. Holzen's original Exhibit 5.0 tables. (See Ex. 4 at ¶ 17 nn.65, 66 (citing Ex. 1 at ¶ 194); Ex. 2 at ¶ 15 nn.73, 74 (citing Ex. 1 at ¶ 194); Ex. 1 at ¶ 194 (citing Exhibit 5.0).) Mr. Holzen superficially relabels these tables to remove reference to the '017 and '893 patents in the Supplements, but the guiding analysis in the tables is precisely the same as original Exhibit 5.0. (Compare Ex. 1 Exhibit 5.0 with Ex. 2 Supplemental Schedule 5.0 with Ex. 4 Second Supplemental Schedule 6.0.) And in Exhibit 5.0, Mr. Holzen decides how much the '442 patent is worth by assigning survey responses to each of the '442, '017, and '893 patents. (See Ex. 1 Exhibits 5.0-5.5.) Any survey responses that he did not assign to one of those three patents was excluded from his further analysis. He then calculates the value of the '442 patent by taking (the percent of survey responses related to the '442 patent) divided by (the percent of survey responses related to the '442, '017, or '893 patents). (Ex. 1 Exhibit 5.0.) The only way for NETGEAR to cross examine Mr. Holzen on the basis for this calculation is to ask him about why he includes the '017 and '893 patents, and why he continues to find that appropriate given the Court's order on summary judgment.

TrackThings apparently wants to insulate Mr. Holzen from effective cross-examination on how he performed his calculations and why. But if Mr. Holzen is allowed to present his damages theory at trial, NETGEAR must be able to cross examine him on how he calculated his royalty rate and why his opinions changed. This indisputably implicates the '017 and '893 patents. NETGEAR must be able to probe whether Mr. Holzen thinks it is proper to include non-infringed patents in his analysis and the extent to which those patents continue to infect his analysis. NETGEAR must further be allowed to explain to the jury that the '017 and '893 patents are not, in fact, infringed, regardless of Mr. Holzen's use of them in his analysis.

NETGEAR therefore requests that the Court deny TrackThings' motion in limine.

Dated: June 13, 2025 Respectfully submitted,

/s/ James L. Higgins

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## EXHIBIT 1

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	)
Plaintiff,	)
v.	) C.A. No. 1:22-cv-00981-JLH
NETGEAR, INC.	)
Defendant.	) )

### AFFIRMATIVE EXPERT REPORT STEPHEN A. HOLZEN

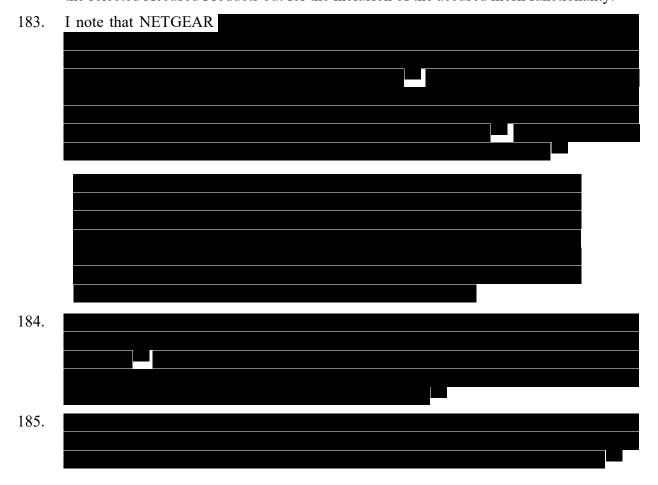
Stephen A. Holzen January 25, 2024

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	d. Adjusted Price of the SSPPU
179.	I then noted that NETGEAR charges a lower price for the SSPPU (per unit) when it is sold as a bundle compared to when it is sold as a standalone product (per unit). 297 Therefore, I allocate per unit back to NETGEAR and use per unit as the selling price for the purpose of further calculation ("the Adjusted SSPPU"). 298
	e. Gross Profit from the Adjusted SSPPU
180.	I then calculated the gross profit that NETGEAR earns from the Adjusted SSPPU (per unit) by subtracting the standalone SSPPU's cost of goods sold (per unit) from the Adjusted SSPPU average selling price (per unit).
	f. Operating Profit from the Adjusted SSPPU
181.	Next, I calculate the operating profit NETGEAR earned from the Adjusted SSPPU (per unit) by subtracting NETGEAR's per-unit operating costs (per unit) from the gross profits of the Adjusted SSPPU (per unit). I understand that NETGEAR
	304
	g. Profit Sharing Allocation
102	
182.	I then calculate the incremental value of the Patents-in-Suit (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products ("Attribution Rate") (per unit). I arrived at the relative premium that customers are willing to pay to purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products. 306 I
297 Exhi	hit 3.2
<sup>298</sup> Exhi	bit 3.0.
<sup>299</sup> Exhi	
300 Exhi	bit 3.0.  ndant NETGEAR, Inc.'s Supplemental Objections and Responses to Plaintiff TrackThings LLC's
Interrog	atories Nos. 2 and 5, December 1, 2023, p. 14.
302 Depo 303 Exhi	osition of Sandeep Harpalani, November 28, 2023, pp. 128-129; NETGEAR-TRACK-006765-800 at 776. bit 3.0.
304 Exhi	bit 3.4.

305 Exhibit 3.0. 306 Exhibit 4.0. understand that the selected benchmark products used in this analysis are comparable to the selected Accused Products but for the inclusion of the accused mesh functionality. <sup>307</sup>



<sup>&</sup>lt;sup>307</sup> Interviews with Dr. Bims.

<sup>308</sup> Deposition of Sandeep Harpalani, November 28, 2023, p. 80.

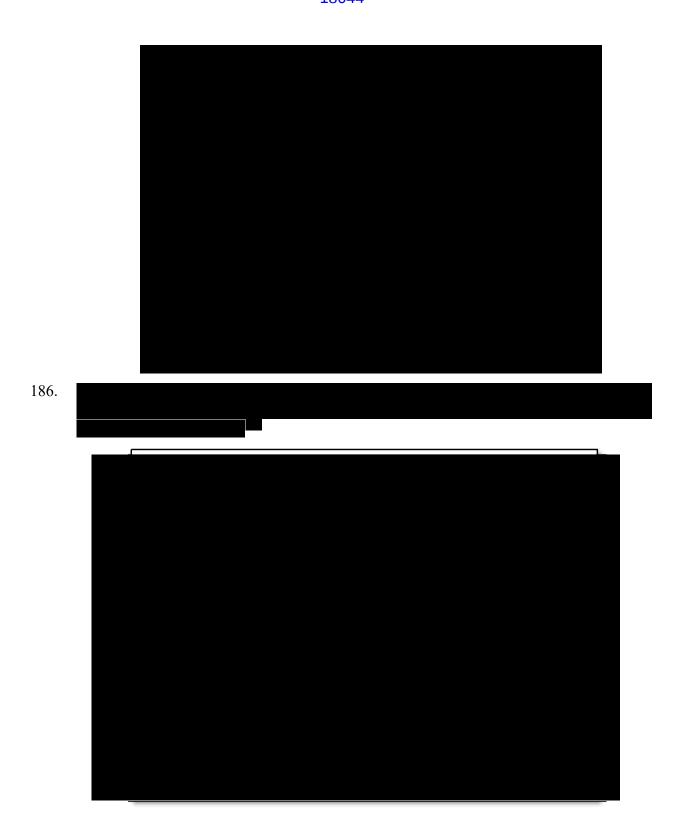
<sup>&</sup>lt;sup>309</sup> Deposition of Sandeep Harpalani, November 28, 2023, pp. 80-82.

<sup>&</sup>lt;sup>310</sup> Deposition of Sandeep Harpalani, November 28, 2023, pp. 80-81. See also Deposition of Joseph Emmanuel, December 13, 2023, pp. 123-124.

<sup>&</sup>lt;sup>311</sup> Deposition of Sandeep Harpalani, November 28, 2023, p. 81.

<sup>&</sup>lt;sup>312</sup> Deposition of Sandeep Harpalani, November 28, 2023, p. 82.

<sup>&</sup>lt;sup>313</sup> NETGEAR-TRACK-007040-071 at 051.



 $<sup>^{314}</sup>$  NETGEAR-TRACK-007040-071 at 052. See also NETGEAR-TRACK-008253-287 at 259; Deposition of Ravindra Bhilave, December 8, 2023, p. 120; NETGEAR-TRACK-008288-320 at 294.

- 187. In addition, NETGEAR's website specifically compares conventional WiFi extenders to mesh WiFi satellites. NETGEAR described conventional WiFi extenders as a "simple device that extends your WiFi signal by rebroadcasting it further into your home." 315
- 188. According to NETGEAR: 316

[T]he difference between the two is that WiFi extenders are used to rebroadcast your home router's WiFi signal. The main drawback is that your devices will not switch between WiFi broadcasts automatically and you experience a disconnection while switching manually. Mesh WiFi uses multiple nodes to create a single, big and seamless WiFi network that covers your whole home. Your devices will connect to the closest node automatically and without any disruptions as you move around your house.

- 189. In addition, NETGEAR publicizes the additional benefits that mesh WiFi products provide as compared to conventional WiFi extenders: 317
  - <u>Easy to Set Up</u>: One of the main benefits of mesh WiFi is that it is very easy to set up. After initial setup, your mesh router is ready to connect to its preconfigured satellites. Moreover, you can simply plug in the first node and then add more nodes as needed. Adding satellites is much easier than setting up multiple WiFi extenders, which each needs to be configured independently from the router.
  - <u>Flexible Coverage</u>: Another benefit of mesh WiFi is that it offers flexible coverage. You can add or remove nodes as needed to change the coverage area. This is perfect for people who move often or have a large home or office.
  - <u>Better Speeds</u>: Mesh WiFi systems offer better speeds than WiFi extenders because the mesh router and satellite nodes are specially tuned to create a unified network. They also cooperate by instantly handing-off connections to devices to the fastest point as they move around the home. The nodes in a mesh network communicate wirelessly, so the WiFi signal does not have to travel from the router to the node and back out again.
  - <u>Very Reliable</u>: Mesh WiFi systems are also very reliable. This is because they use multiple nodes, so if one node is too far away or goes down, the others can still provide a WiFi signal. WiFi extenders, on the other hand, only have one device. If that device goes down, you will not be able to connect to the [I]nternet.
  - Easy to Scale: As your WiFi and connectivity needs increase, you'll have to increase capacity to match usage. This is one of the things that makes mesh WiFi systems ideal as they're easy to scale. You can simply add more nodes to the mesh network as needed. This is perfect for businesses that are constantly expanding.

<sup>315</sup> https://www.netgear.com/hub/technology/wifi-extender-vs-mesh-wifi-which-is-better/.

<sup>316</sup> https://www.netgear.com/hub/technology/wifi-extender-vs-mesh-wifi-which-is-better/.

https://www.netgear.com/hub/technology/wifi-extender-vs-mesh-wifi-which-is-better/. *See also* https://kb.netgear.com/31031/How-is-an-Orbi-system-different-from-an-extender/.

- <u>Minimizes Dead zones</u>: Mesh WiFi systems are also good at minimizing dead zones. Dead zones are areas in your home or office where the WiFi signal is weak or non-existent. This is because mesh WiFi systems use multiple nodes that communicate with each other wirelessly. So, even if one node is in a dead zone, the others can still provide a WiFi signal.
- 190. NETGEAR then summarize the advantages of a mesh WiFi system as compared to using a conventional WiFi extender, with one of the disadvantages of a mesh WiFi system being price:<sup>318</sup>

### Why Choose a Mesh WiFi System? Advantages Disadvantages ✓ One big, seamless Wi-Fi network for your whole x More expensive than extenders. × Nodes don't plug straight into the wall as extenders ✓ No need to manually switch to any different network. ✓ Self-organises to keep you connected to the closest node with the strongest Wi-Fi signal. Reliable even when one node fails. Nodes can be moved to different locations. ✓ Just add more nodes to increase your Wi-Fi signal coverage. Easier to set up and control via a phone app. Stylish node design.

191.

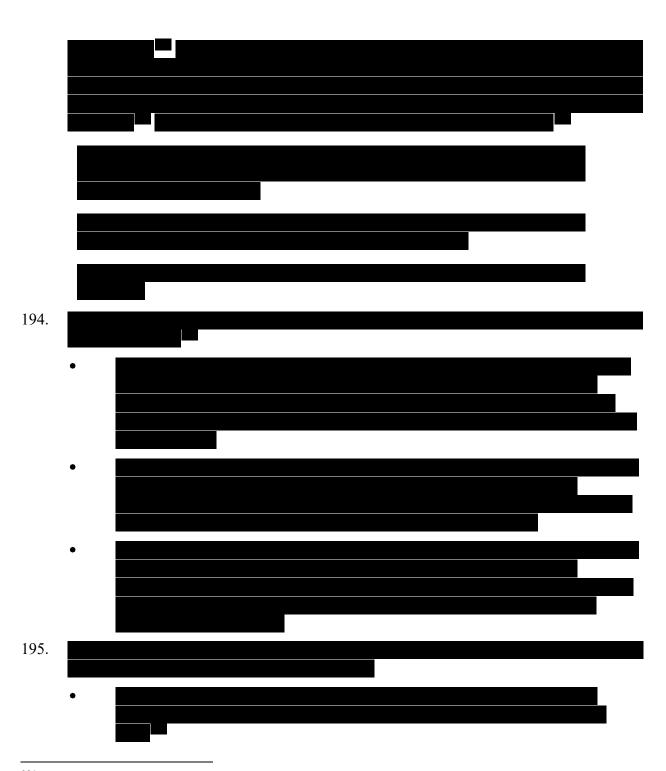
h. Allocation To Each of the Patents-in-Suit

- 192. Lastly, I allocate the incremental value of the Patents-in-Suit between each of the Patents-in-Suit based on the reasons NETGEAR's customers purchase the Accused Products.
- 193.

<sup>318</sup> https://www.netgear.com/hub/technology/wifi-extender-vs-mesh-wifi-which-is-better/.

<sup>&</sup>lt;sup>319</sup> Deposition of Ravindra Bhilave, December 8, 2023, p. 110.

<sup>&</sup>lt;sup>320</sup> Deposition of Ravindra Bhilave, December 8, 2023, p. 56; NETGEAR-TRACK-008253-287 at 255.



<sup>&</sup>lt;sup>321</sup> Deposition of Sandeep Harpalani, November 28, 2023, pp. 91, 95.

<sup>322</sup> Deposition of Sandeep Harpalani, November 28, 2023, p. 92. *See also* Deposition of Sandeep Harpalani, November 28, 2023, pp. 112-113.

<sup>&</sup>lt;sup>323</sup> Deposition of Sandeep Harpalani, November 28, 2023, pp. 99; NETGEAR-TRACK-009761.

<sup>&</sup>lt;sup>324</sup> Exhibit 5.0.

<sup>&</sup>lt;sup>325</sup> Exhibit 3.0.

#### 14. Factor 14: The Opinion Testimony of Qualified Experts

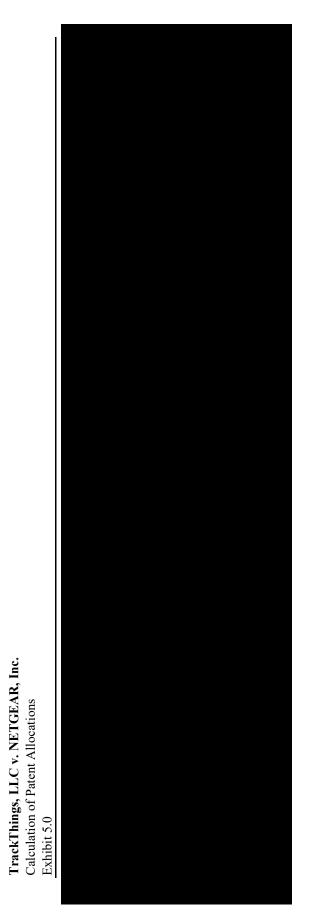
- 196. This factor requires consideration of the opinion testimony of qualified experts. I understand that Dr. Bims will submit an expert report on January 25, 2024. It is my understanding that Dr. Bims will opine that the Patents-in-Suit are valid, infringed, and that there are no non-infringing alternatives to the Patents-in-Suit.<sup>328</sup>
- 197. Given that I have assumed the Court will find the Defendant liable for infringing each of the Patents-in-Suit, this factor has a neutral impact on the hypothetical royalty for both of the hypothetical negotiations.
  - 15. Factor 15: The Amount That A Licensor (Such As The Patentee) And A Licensee (Such As The Infringer) Would Have Agreed Upon (At The Time The Infringement Began) If Both Had Been Reasonably And Voluntarily Trying To Reach An Agreement, That Is, The Amount Which A Prudent Licensee—Who Desired, As A Business Proposition, To Obtain A License To Manufacture And Sell A Particular Article Embodying The Patented Invention—Would Have Been Willing To Pay As A Royalty And Yet Be Able To Make A Reasonable Profit And Which Amount Would Have Been Acceptable By A Prudent Patentee Who Was Willing To Grant A License
- 198. This factor describes the integration of the preceding factors and any other factors that may inform the parties as to relevant considerations within the willing buyer/willing seller hypothetical negotiation framework. As the name implies, the parties in the negotiation are presumed to be willing; they each seek, as prudent businesspeople, to reach an agreement. Another key factor in this hypothetical negotiation is that each party is assumed to "lay their cards face up on the table" so that each has an understanding of the others' positions as well as the facts and circumstances underlying each of their positions. Finally, the hypothetical negotiation presumes that the involved patent(s) are valid and enforceable and that the licensee's unlicensed use of the involved patents requires that it pay the patentee "reasonable and entire compensation" for the use of its invention.
- 199. It is understood in any negotiation the licensee would prefer to pay as little royalties as possible, and the licensor would want to receive as much royalties as possible. I accept the motivations of each of the negotiating parties. The results of the *Georgia-Pacific* Factor analysis demonstrate four factors that support a higher rate (factors 6, 7, 9/10, 11), four

<sup>326</sup> Exhibit 3.0.

<sup>&</sup>lt;sup>327</sup> Exhibit 3.0.

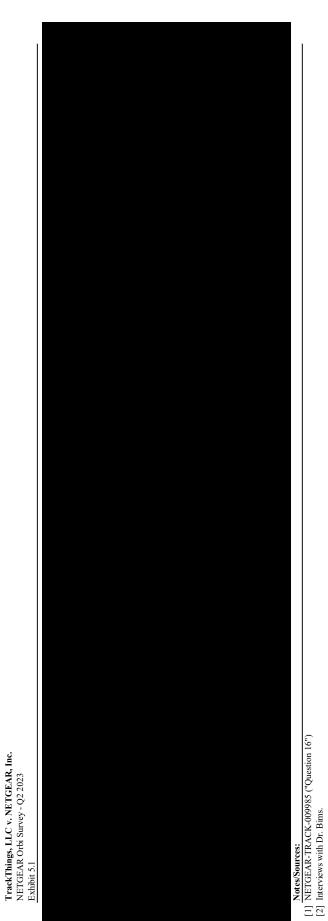
<sup>&</sup>lt;sup>328</sup> Interviews with Dr. Bims.

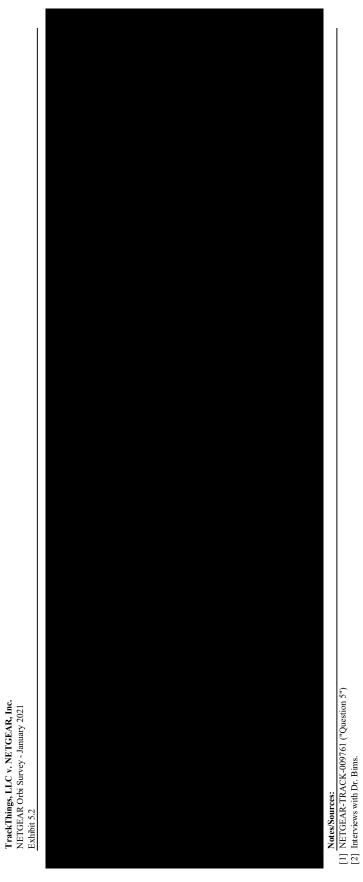
### **Appendix C**

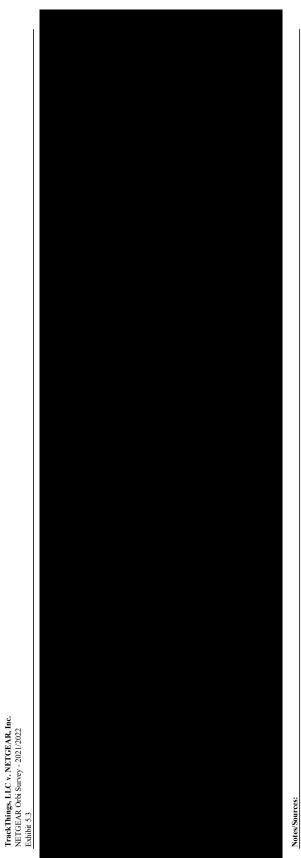


- Notes/Sources:
  [1] Interviews with Dr. Bims
  [2] Exhibit 5.1
  [3] Exhibit 5.2
  [4] Exhibit 5.3
  [5] Exhibit 5.4
  [6] Exhibit 5.5

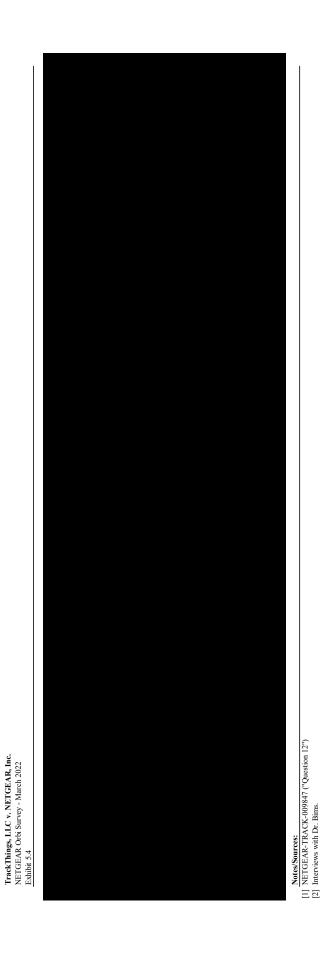
Page 1 of 1

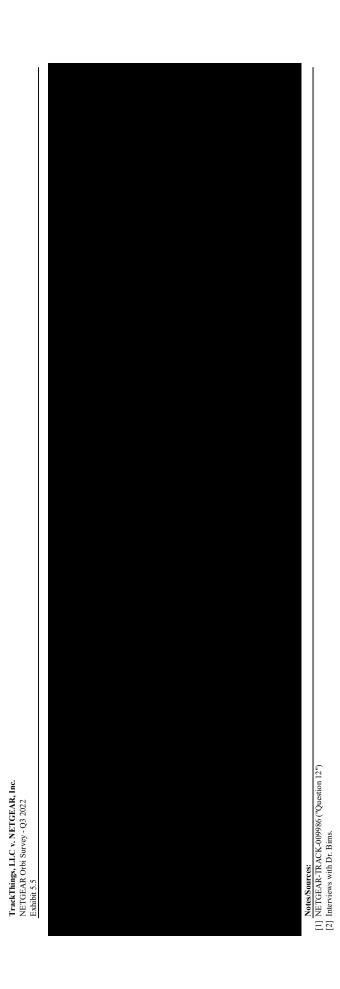






Notes/Sources:
[1] NETGEAR-TRACK-009832 ("Question 9")
[2] Interviews with Dr. Bims.





## EXHIBIT 2

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	)
Plaintiff,	)
v.	) C.A. No. 1:22-cv-00981-JLH
NETGEAR, INC.,	)
Defendant.	) )

### SUPPLEMENTAL EXPERT REPORT OF STEPHEN A. HOLZEN

Stephen A. Holzen March 13, 2025

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- sales of the Accused Products total retail and ESTORE units from April 6, 2017 to May 30, 2025.<sup>43</sup>
- Fifth, in recognition of the fact that the compensation period presently extends from June 23, 2021 through May 30, 2025, I estimate the portion of Defendant's sales that occurred during only this period. This analysis assumes Defendant sold the same number of Accused Products per day throughout the year. With this assumption, I estimate that Defendant sold units of Accused Products from June 23, 2021 through May 30, 2025. I base this conclusion on the conservative assumption that Defendant's annual unit sales of the Accused Products remain flat for future periods, notwithstanding the fact that NETGEAR stated to investors that its unit sales were increasing.
- Sixth, I calculate the royalty base for the '442 Patent (units) by multiplying the total units sold from June 23, 2021 through May 30, 2025 by and then again by and the reasons previously explained in the Holzen Reports. 48

#### 2. Royalty Rate

15. It is my opinion that there is no established royalty rate for the Patent-in-Suit. <sup>49</sup> In the absence of an established royalty rate, the determination of reasonable royalty damages can be based upon the construct of a hypothetical negotiation between a willing licensee and a willing licensor at the date of first infringement. <sup>50</sup> The standard I adopt for determining a reasonable royalty is based on the incremental value that the patented invention adds to an end product. <sup>51</sup> This standard is consistent with the academic literature that I consider in the normal course of my work, <sup>52</sup> consistent with other court decisions that I reviewed in the normal course of my work, <sup>53</sup> and consistent with the standard I follow in my other patent damages engagements, including in *VideoShare*,

<sup>&</sup>lt;sup>43</sup> Supplemental Schedule 6.0.

<sup>44</sup> Supplemental Schedule 1.1.

<sup>&</sup>lt;sup>45</sup> Supplemental Schedule 1.1.

<sup>&</sup>lt;sup>46</sup> NETGEAR, Inc. FQ3 2024 Earnings Call Transcript, October 30, 2024, p. 7; NETGEAR, Inc. FQ4 2024 Earnings Call Transcript, February 5, 2025, p. 8.

<sup>&</sup>lt;sup>47</sup> Supplemental Schedule 1.1.

<sup>&</sup>lt;sup>48</sup> Affirmative Holzen Report, ¶¶ 98-101.

<sup>&</sup>lt;sup>49</sup> Affirmative Holzen Report, ¶ 80.

<sup>&</sup>lt;sup>50</sup> Affirmative Holzen Report, ¶ 80.

 $<sup>^{51}</sup>$  Affirmative Holzen Report, ¶¶ 172-195, 200, 203.

<sup>&</sup>lt;sup>52</sup> See, *e.g.*, Michael Mard and Joseph A. Agiato, Jr., Valuing Intellectual Property & Calculating Infringement Damages, AICPA Practice Aid 99-2 (1999), p. 49; Weil, Roman et al, *Litigation Services Handbook*, Sixth Edition, The Role of the Financial Expert, Section 20, pp. 6, 22, 29, 31, and 36; https://www.mintz.com/insights-center/viewpoints/2231/2018-02-15-federal-circuit-approves-apportioning-damages-through; https://www.finnegan.com/en/insights/articles/court-rejects-damages-report-for-reliance-on-non-comparable-licenses-and-for-failure-to-account-for-unpatented-features-in-comparable-licenses.html.

<sup>&</sup>lt;sup>53</sup> Ericsson, Inc. v. D-Link Sys., Inc., 773 F.3d 1201, 1226 (Fed. Cir. 2014); Commonwealth Sci. & Indus. Research Organisation v. Cisco Sys., 809 F.3d 1295, 1301 (Fed. Cir. 2015); Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., 853 F.3d 1370, 1380 (Fed. Cir. 2017).

LLC v. Google LLC et al. (W.D. Tex, 6:19-cv-00663-ADA)<sup>54</sup> and in TrackThings vs. Amazon.com Services LLC and eero LLC (W.D. Tex, 6:23-cv-00133-ADA). 55 As previously described in the Holzen Reports, I perform an analysis that measures the "incremental value associated with the use made of the Patent II-in-Suit by the

	dant" using a multi-step process: <sup>56</sup>
•	First, I calculated the average selling price for the Accused Products unit from April 6, 2017 to August 27, 2023). <sup>57</sup>
•	Second, I determined that the was the smallest salable patent practicing unit ("SSPPU"). 58 The average selling price of the SSPPU was per unit. 59
•	Third, I compared the average per-unit selling price of the Accused Products ( ) to the per-unit price of the SSPPU ( ) sold as a standalone product and allocated the difference ( per unit) back to Defendant. 60
•	Fourth, I observed that Defendant charged a lower price for the SSPPU when it was sold as a bundle (per unit) compared to when it was sold as a standalone product (per unit). Therefore, I allocated per unit back to NETGEAR and instead used the per-unit amount as the selling price of the SSPPU for the remainder of my analysis (the "Adjusted SSPPU"). 62
•	Fifth, I calculated the gross profit that NETGEAR earned from the Adjusted SSPPU (per unit) by subtracting the standalone SSPPU's cost of goods sold (per unit) from the Adjusted SSPPU average selling price (per unit).
•	Sixth, I calculated the operating profit that NETGEAR earned from the Adjusted SSPPU (per unit) by subtracting NETGEAR's operating costs (per unit) per unit)
Rule of Evidence Docket #180 [sec 55 [Redacted] Do Stephen A. Holz 00133-ADA); Do cv-00133-ADA) 56 Affirmative H	efendants' Motion to Exclude Damages Opinions of Mr. Stephen Holzen Under Daubert and Federal 702, August 31, 2021, VideoShare, LLC v. Google LLC et al. (W.D. Tex, 6:19-cv-00663-ADA); aled] in VideoShare, LLC v. Google LLC et al. (W.D. Tex, 6:19-cv-00663-ADA) denying motion. efendants' Opposed Motion to Exclude the Unreliable Testimony of TrackThings' Damages Expert en, April 23, 2024, TrackThings vs. Amazon.com Services LLC and eero LLC (W.D. Tex, 6:23-cv-ocket #172 [sealed] in TrackThings vs. Amazon.com Services LLC and eero LLC (W.D. Tex, 6:23-denying motion. folzen Report, ¶¶ 172-195.
SSPPU for infrir selection of the discussed therein (Affirmative Hol considered for ea	as the agement of the '442 Patent if the '017 Patent and '893 Patent are not infringed. However, the as the SSPPU in this matter is appropriate for the reasons set forth in the Holzen Reports. As it is the lowest-priced unit sold that incorporates the fewest number of technical features. Izen Report, ¶ 177). I understand that NETGEAR has not argued that separate SSPPUs should be ach of the '442, '017, and '893 Patents.
<sup>60</sup> Affirmative H	folzen Report, ¶ 178.
Affirmative H	folzen Report, ¶ 179.

<sup>62</sup> Affirmative Holzen Report, ¶ 179. <sup>63</sup> Affirmative Holzen Report, ¶ 180. unit) from the gross profit earned from the Adjusted SSPPU (per unit). 64 These operating costs include at least technical support costs, customer marketing – direct, and indirect overhead costs (including sales, product marketing, and G&A). 65

Seventh, I then calculated the incremental value of mesh-Wifi technology ( per unit) by multiplying the operating profit from the Adjusted SSPPU ( per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution Rate") ( ).66 I arrived at the relative premium that customers are willing to pay to purchase the Accused Products by comparing the price of certain of the Accused Products to the reported selling price of benchmark third-party products and based on the retail price of third-party or NETGEAR products. 67 I understand that the selected benchmark products used in this analysis are comparable to the selected Accused Products but for the inclusion of certain mesh functionality. 68 As previously discussed in the Holzen Reports, this apportioned value of the SSPPU reflects the apportioned incremental value associated with the routing of user data using different software radios, intelligent node placement, and dynamic network reconfiguration.<sup>69</sup> For purposes of the Holzen Reports, I assumed that intelligent node placement and the dynamic network reconfiguration were associated with the technology of the '017 and '893 Patents, respectively. 70 While I understand that the Court has since found that the Accused Products do not infringe the '017 and '893 Patents, this calculation remains an appropriate part of the methodology in calculating the incremental value of the technology that infringes the '442 Patent over the technologically-closest conventional products in the marketplace.

Eighth, I then calculate the incremental value of only the '442 Patent per unit) by allocating of the incremental value of mesh-Wifi technology (per unit) to the '442 Patent.<sup>71</sup> This analysis is based on data obtained from Specifically,

<sup>&</sup>lt;sup>64</sup> Affirmative Holzen Report, ¶ 181.

<sup>&</sup>lt;sup>65</sup> Affirmative Holzen Report, ¶ 181.

<sup>&</sup>lt;sup>66</sup> Affirmative Holzen Report, ¶ 182.

<sup>&</sup>lt;sup>67</sup> Affirmative Holzen Report, ¶ 182.

<sup>&</sup>lt;sup>68</sup> Affirmative Holzen Report, ¶ 182.

<sup>&</sup>lt;sup>69</sup> Affirmative Holzen Report, ¶¶ 67, 182.

<sup>&</sup>lt;sup>70</sup> Affirmative Holzen Report, ¶ 67.

<sup>71</sup> Affirmative Holzen Report, ¶¶ 192-195.

<sup>&</sup>lt;sup>72</sup> Affirmative Holzen Report, ¶¶ 193-194.



This calculation of incremental value attributable to the '442 Patent credits back to NETGEAR per unit for the value associated with mesh improvements not covered by the '442 Patent (i.e., intelligent node placement and dynamic network reconfiguration). In the Holzen Reports, I credited the value associated with these additional features to the technology covered by the '017 and '893 Patents. However, whether these additional features were covered by separate patents does not affect the relative apportionment of the per unit value that I previously calculated in the Holzen Reports. That value corresponds to consumer demand for technology that is not included in the benchmark products nor otherwise accounted for in the deductions and allocations I make in the preceding steps of my calculations. As a result, the apportioned (i.e., incremental) value of the technological benefits associated with the '442 Patent (per unit) remains the same regardless of whether the other identified technology (i.e., intelligent node placement and dynamic network reconfiguration) infringe other of TrackThings' patents (i.e., the '017 Patent and the '893 Patent).

#### C. Conclusion

17. I calculate a reasonable royalty adequate to compensate Plaintiff for Defendant's infringing use of the Patent-in-Suit by multiplying the royalty base (units sold of the Accused Products) by the royalty rate (per unit). 75

18. I understand that

. To In addition, for the Accused Products that Defendant has produced data, I understand that this is nearly 18 months old. While I have attempted to estimate damages for these missing periods and products, I made certain conservative assumptions that potentially understated the royalties owed to TrackThings, evidenced by Defendant's public statements to investors that sales of the Accused Products are going well for the period in which it has not produced sales data. To the extent Defendant

<sup>&</sup>lt;sup>73</sup> Affirmative Holzen Report, ¶ 194; Supplemental Schedule 5.0.

<sup>&</sup>lt;sup>74</sup> Affirmative Holzen Report, ¶ 194; Supplemental Schedule 5.0.

<sup>&</sup>lt;sup>75</sup> Supplemental Schedule 1.0.

<sup>&</sup>lt;sup>76</sup> These at least include the products listed on Supplemental Schedules 9.1 and 9.2.

<sup>&</sup>lt;sup>77</sup> NETGEAR has produced data through August 27, 2023 (NETGEAR-TRACK-009987; NETGEAR-TRACK-011232).

<sup>&</sup>lt;sup>78</sup> NETGEAR, Inc. FQ3 2024 Earnings Call Transcript, October 30, 2024, p. 7; NETGEAR, Inc. FQ4 2024 Earnings Call Transcript, February 5, 2025, p. 8.

**Supplemental Appendix C** 

Calculation of Patent Allocations Supplemental Schedule 5.0



- [1] Interviews with Dr. Bims
- [2] Supplemental Schedule 5.1
- [3] Supplemental Schedule 5.2
- [4] Supplemental Schedule 5.3
- [5] Supplemental Schedule 5.4
- [6] Supplemental Schedule 5.5

NETGEAR Orbi Survey - Q2 2023

Supplemental Schedule 5.1



- Notes/Sources:
  [1] NETGEAR-TRACK-009985 ("Question 16")
  [2] Interviews with Dr. Bims.

NETGEAR Orbi Survey - January 2021

Supplemental Schedule 5.2



- [1] NETGEAR-TRACK-009761 ("Question 5")
- [2] Interviews with Dr. Bims.

NETGEAR Orbi Survey - 2021/2022

Supplemental Schedule 5.3



- [1] NETGEAR-TRACK-009832 ("Question 9")
- [2] Interviews with Dr. Bims.

NETGEAR Orbi Survey - March 2022

Supplemental Schedule 5.4



- [1] NETGEAR-TRACK-009847 ("Question 12")
- [2] Interviews with Dr. Bims.

NETGEAR Orbi Survey - Q3 2022

Supplemental Schedule 5.5



- [1] NETGEAR-TRACK-009986 ("Question 12")
- [2] Interviews with Dr. Bims.

# EXHIBIT 3

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v. C.A. No. 22-981-JLH

NETGEAR, INC.,

Defendant.

\*\*\*\*\*\*\*\*\*

\*\*\*\*\*\*\*\*\*\*\*

REMOTE VIDEOCONFERENCE DEPOSITION OF STEPHEN HOLZEN

September 6, 2024

Reported by:

Anne E. Vosburgh, CSR-6804, RPR, CRR

Job No. 1200386



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1
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         Peter van der Vlugt, Legal Videographer
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```



Page 155 What I want is to re-express the 1 2 relative importance of these -- of the primary 3 reasons for customers buying Netgear Orbi WiFi mesh systems on a 100 percent basis. 4 5 So I take percent, which is the first line item, divide it into 6 7 which is the total, and that gets you to a right-sized percentage so that the total is 9 100 percent. And that amount is percent. 10 Q. Got it. Okay. I think I understand 11 what you've done here. 12 So for Row 6, "Whole-home WiFi 13 coverage," you're taking percent and 14 dividing that by percent to arrive at 15 percent, correct? 16 Α. Yes. And you're attributing that entire 17 Q. 18 percent to the alleged infringement of 19 the '017 and '893 patents, correct? 2.0 MR. GILMAN: Objection to the form. 21 Α. I just take issue with the way it 22 was characterized. 23 The purpose of doing this is to 24 understand the relative importance of the 25 patented -- of each of the individual patents.



Page 156 So once you identify, hey, you're at 1 2 the incremental value of the patented 3 functionality in total, then it raises the question, well, what's the individual value of each -- of that , how do you allocate 5 6 that between the patents? 7 BY MR. CHEN: Sure. Q. 9 A. And so there's different reasons --10 let's say different benefits associated with 11 each of the patents-in-suit. And so I'm using 12 this survey in combination with the other 13 surveys to understand the relative value of 14 each patent to each other, but not relative to 15 the entire value of the product. 16 It's just what is the relative value 17 between the patents, not the relative value of 18 the patents to the ultimate product. 19 Q. Okay. And you have an X for -- for 2.0 that row, you have 21 an X for the '017 patent. You have an X for 22 the '893 patent, correct? 23 I do. Α. 24 Okay. And so you are essentially 25 counting that reason twice, right? You're



Page 157 double counting that reason? 1 2 MR. GILMAN: Objection to the form. 3 Α. No. BY MR. CHEN: 4 5 Q. Why do you say that? 6 Because I don't agree with that Α. 7 characterization. What I'm doing is noting that the '017 patent and the '893 patent are associated with the benefits of offering 9 10 whole-home WiFi coverage. 11 So you're not double counting them. 12 Like, they're not additive. What you're doing 13 is actually sharing the value between them, 14 right? 15 So you're looking at the percentage 16 of -- the percentage that's related to 17 the '017, the percentage that's related to the 18 '893, and then you're not -- it's not a double 19 count. There's not like adding numbers up. 20 It's just saying, look, they both relate to 21 this benefit. They both offer this benefit. 2.2 So if you're trying to allocate 23 value between the patents, you can do that 24 based on the relative value of each one, which 25 means that you're separating value. You're



	10070
	Page 248
1	CERTIFICATE
2	
3	I, ANNE E. VOSBURGH, Certified
4	Shorthand Reporter, Registered Professional
5	Reporter, Certified Realtime Reporter hereby
6	certify:
7	That STEPHEN HOLZEN, via remote
8	videoconference, agreed to testify truthfully,
9	under penalty of perjury; that all counsel
10	stipulated to the remote swearing and waive
11	objection, notwithstanding the location of
12	reporter or witness during testimony; and that
13	this transcript is a true and correct record
14	of testimony given.
15	I further certify that I am not
16	related to any of the parties and am in no way
17	financially interested in the outcome of this
18	matter.
19	
20	Anns E. Vosburgh
21	ANNE E. VOSBURGH, CSR, HPR, CRR
22	Notary Public - Exp. July 20, 2029
23	
24	
25	
I	



# EXHIBIT 4

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	)
Plaintiff,	)
v.	) C.A. No. 1:22-cv-00981-JLH
NETGEAR, INC.,	)
Defendant.	) ) )

# SECOND SUPPLEMENTAL EXPERT REPORT OF STEPHEN A. HOLZEN

Stephen A. Holzen

May 9, 2025

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	C.	Conclusion	10
IV.	PR	EJUDGMENT INTEREST	10

5. The opinions expressed in this report are based on the information made available to me as of the date of this report. I reserve the right to review any information produced by the parties subsequent to the date of this report and update this report as necessary to reflect any additional analysis and conclusions. I also reserve the right to amend, rebut, or provide opinions upon any new evidence, testimony, analysis, or arguments made by Defendant.

#### II. SUMMARY OF ANALYSIS AND CONCLUSIONS

- 6. I understand that under patent law, TrackThings is entitled to compensation for Defendant's infringement of the Patent-in-Suit in an amount no less than a reasonable royalty. Given the facts and circumstances noted within this report and based on my review of the documents and information made available to me, it is my opinion that damages are appropriately measured as a reasonable royalty. It is common to calculate a reasonable royalty by multiplying a royalty base by a royalty rate. It therefore calculate a reasonable royalty in this case by first calculating a royalty base, then calculating a royalty rate, then multiplying the royalty base by the royalty rate to arrive at the total amount of royalties due by Defendant.
- 7. I first calculate the royalty base by analyzing the use made of the Patent-in-Suit by Defendant between June 23, 2021 and February 23, 2025, the date through which NETEAR has produced financial information. <sup>10</sup> The royalty base is equal to the number of units of the Accused Products sold by Defendant between June 23, 2021 and February 23, 2025 units of the Accused Products). <sup>11</sup>
- 8. I next calculate the royalty rate for the Patent-in-Suit by performing a quantitative and qualitative analysis conducted within the framework set forth in the fifteen *Georgia-Pacific* factors. <sup>12</sup> As part of my consideration of the *Georgia-Pacific* factors, I perform an apportionment analysis consistent with the generally accepted approach known as the "Income Approach." <sup>13</sup> Using this approach, I calculate the incremental value of the Patent-in-Suit. <sup>14</sup> I then opine that neither TrackThings nor Defendant would have a stronger bargaining position relative to the other. <sup>15</sup> Given this, I opine that the parties

<sup>&</sup>lt;sup>6</sup> Affirmative Holzen Report, ¶ 18.

<sup>&</sup>lt;sup>7</sup> Affirmative Holzen Report, ¶ 18.

<sup>&</sup>lt;sup>8</sup> Affirmative Holzen Report, ¶ 18.

<sup>&</sup>lt;sup>9</sup> Affirmative Holzen Report, ¶ 18.

<sup>&</sup>lt;sup>10</sup> NETGEAR-TRACK-011565; NETGEAR-TRACK-011566; NETGEAR-TRACK-011567; Defendant NETGEAR, Inc.'s Objections and Responses to Plaintiff TrackThings LLC's Questions Regarding Production NETGEAR-TRACK-016, May 2, 2025, p. 9.

<sup>&</sup>lt;sup>11</sup> Second Supplemental Schedule 2.0.

<sup>&</sup>lt;sup>12</sup> Affirmative Holzen Report, ¶¶ 108-203.

<sup>&</sup>lt;sup>13</sup> Affirmative Holzen Report, ¶ 172-195, 200-203.

<sup>&</sup>lt;sup>14</sup> Affirmative Holzen Report, ¶¶ 200, 203.

<sup>&</sup>lt;sup>15</sup> Affirmative Holzen Report, ¶ 203.

would agree to a royalty equal to the incremental value of the Patent-in-Suit of	per
unit sold of the Accused Products. 16	

- 9. I calculate a reasonable royalty adequate to compensate Plaintiff for Defendant's infringing use of the Patent-in-Suit from June 23, 2021 through February 23, 2025 ( ) by multiplying the royalty base ( ) units of the Accused Products) by the royalty rate ( ) per unit). 17
- 10. Presently, I offer this supplemental report and analysis to update my calculations based upon the Court's Order and the updated financial data produced by NETGEAR. In general, the opinions expressed in this report are consistent with the opinions previously expressed in the Holzen Reports. More specifically, the methods and principles I presently use to calculate Defendant's unit sales and arrive at my royalty rate opinion are consistent with the methods and principles that I previously used to calculate Defendant's unit sales and arrive at my royalty rate opinion. I note that the incremental value of the '442 Patent (*i.e.*, the royalty rate for the '442 Patent) only changed from the incremental value calculated in the Holzen Reports to account for updating pricing information made available in NETGEAR's recently produced financial data. <sup>18</sup>
- 11. I did, however modify my royalty base calculation in two ways. First, I assume the compensation period begins June 23, 2021, consistent with the Court's Order. Second, I assume the compensation period ends February 23, 2025, the date through which NETEAR has produced financial information. <sup>19</sup> However, I understand that Plaintiff may request an accounting of Defendant's financial data at an appropriate time after the conclusion of trial. For convenience purposes only, I present, in **Second Supplemental Appendix C**, an updated set of schedules that aggregates data and information from the present report and the Holzen Reports.

#### III. OVERVIEW OF ANALYSIS

#### A. Assumptions

#### 1. Liability Assumed

12. As in all cases, whether engaged by counsel for a plaintiff or a defendant, I assume that the '442 Patent is valid, enforceable, and infringed by Defendant.<sup>20</sup>

 $<sup>^{16}</sup>$  Second Supplemental Schedule 3.0; Affirmative Holzen Report, ¶¶ 172-195, 200-203. This royalty rate decreased from the calculation presented in the Holzen Reports due to the addition of approximately 18 months of financial data made available by NETGEAR.

<sup>&</sup>lt;sup>17</sup> Second Supplemental Schedule 1.0.

The royalty rate for the '442 Patent changed from per unit to per unit (Affirmative Holzen Report, ¶ 204; Second Supplemental Schedule 3.0; Supplemental Schedule 2.0).

<sup>&</sup>lt;sup>19</sup> NETGEAR-TRACK-011565; NETGEAR-TRACK-011566; NETGEAR-TRACK-011567; Defendant NETGEAR, Inc.'s Objections and Responses to Plaintiff TrackThings LLC's Questions Regarding Production NETGEAR-TRACK-016, May 2, 2025, p. 9.

<sup>&</sup>lt;sup>20</sup> Affirmative Holzen Report, ¶ 11.

February 23, 2025 (units of Accused Products) by and then again by for the reasons previously explained in the Holzen Reports. 40

### 2. Royalty Rate

- 17. It is my opinion that there is no established royalty rate for the Patent-in-Suit. <sup>41</sup> In the absence of an established royalty rate, the determination of reasonable royalty damages can be based upon the construct of a hypothetical negotiation between a willing licensee and a willing licensor at the date of first infringement. <sup>42</sup> The standard I adopt for determining a reasonable royalty is based on the incremental value that the patented invention adds to an end product. <sup>43</sup> This standard is consistent with the academic literature that I consider in the normal course of my work, <sup>44</sup> consistent with other court decisions that I reviewed in the normal course of my work, <sup>45</sup> and consistent with the standard I follow in my other patent damages engagements, including in *VideoShare*, *LLC v. Google LLC et al.* (W.D. Tex, 6:19-cv-00663-ADA) <sup>46</sup> and in *TrackThings vs. Amazon.com Services LLC and eero LLC* (W.D. Tex, 6:23-cv-00133-ADA). <sup>47</sup> As previously described in the Holzen Reports, I perform an analysis that measures the "incremental value associated with the use made of the Patent[]-in-Suit by the Defendant" using a multi-step process: <sup>48</sup>
  - First, I calculated the average selling price for the Accused Products unit from April 6, 2017 to February 23, 2025). 49
  - Second, I considered the as the smallest salable patent practicing unit ("SSPPU") for the reasons discussed in the Holzen Reports, including my

<sup>&</sup>lt;sup>39</sup> Second Supplemental Schedule 2.0.

<sup>&</sup>lt;sup>40</sup> Affirmative Holzen Report, ¶¶ 98-101.

<sup>&</sup>lt;sup>41</sup> Affirmative Holzen Report, ¶ 80.

<sup>&</sup>lt;sup>42</sup> Affirmative Holzen Report, ¶ 80.

<sup>&</sup>lt;sup>43</sup> Affirmative Holzen Report, ¶¶ 172-195, 200, 203.

<sup>&</sup>lt;sup>44</sup> See, *e.g.*, Michael Mard and Joseph A. Agiato, Jr., Valuing Intellectual Property & Calculating Infringement Damages, AICPA Practice Aid 99-2 (1999), p. 49; Weil, Roman et al, *Litigation Services Handbook*, Sixth Edition, The Role of the Financial Expert, Section 20, pp. 6, 22, 29, 31, and 36; https://www.mintz.com/insights-center/viewpoints/2231/2018-02-15-federal-circuit-approves-apportioning-damages-through; https://www.finnegan.com/en/insights/articles/court-rejects-damages-report-for-reliance-on-non-comparable-licenses-and-for-failure-to-account-for-unpatented-features-in-comparable-licenses.html.

<sup>&</sup>lt;sup>45</sup> Ericsson, Inc. v. D-Link Sys., Inc., 773 F.3d 1201, 1226 (Fed. Cir. 2014); Commonwealth Sci. & Indus. Research Organisation v. Cisco Sys., 809 F.3d 1295, 1301 (Fed. Cir. 2015); Rembrandt Wireless Techs., LP v. Samsung Elecs. Co., 853 F.3d 1370, 1380 (Fed. Cir. 2017).

<sup>&</sup>lt;sup>46</sup> [Redacted] Defendants' Motion to Exclude Damages Opinions of Mr. Stephen Holzen Under Daubert and Federal Rule of Evidence 702, August 31, 2021, *VideoShare, LLC v. Google LLC et al.* (W.D. Tex, 6:19-cv-00663-ADA); Docket #180 [sealed] in *VideoShare, LLC v. Google LLC et al.* (W.D. Tex, 6:19-cv-00663-ADA) denying motion.

<sup>47</sup> [Redacted] Defendants' Opposed Motion to Exclude the Unreliable Testimony of TrackThings' Damages Expert Stephen A. Holzen, April 23, 2024, *TrackThings vs. Amazon.com Services LLC and eero LLC* (W.D. Tex, 6:23-cv-

Stephen A. Holzen, April 23, 2024, *TrackThings vs. Amazon.com Services LLC and eero LLC* (W.D. Tex, 6:23-cv-00133-ADA); Docket #172 [sealed] in *TrackThings vs. Amazon.com Services LLC and eero LLC* (W.D. Tex, 6:23-cv-00133-ADA) denying motion.

 $<sup>^{48}</sup>$  Affirmative Holzen Report, ¶¶ 172-195.

<sup>&</sup>lt;sup>49</sup> Affirmative Holzen Report, ¶ 176; Second Supplemental Schedule 3.0.

understanding from Dr. Bims that Accused Routers include non-patented				
functionality and have more features than the Accused Satellites. 50 The average				
selling price of the SSPPU was	per unit. <sup>51</sup>			

- Third, I compared the average per-unit selling price of the Accused Products ( ) to the per-unit price of the SSPPU ( ) sold as a standalone product and allocated the difference ( per unit) back to Defendant. 52
- Fourth, I observed that Defendant charged a lower price for the SSPPU when it was sold as a bundle (per unit) compared to when it was sold as a standalone product (per unit). Therefore, I allocated per unit back to NETGEAR and instead used the per-unit amount as the selling price of the SSPPU for the remainder of my analysis (the "Adjusted SSPPU"). 54
- Fifth, I calculated the gross profit that NETGEAR earned from the Adjusted SSPPU (per unit) by subtracting the standalone SSPPU's cost of goods sold per unit) from the Adjusted SSPPU average selling price (per unit). 55
- Sixth, I calculated the operating profit that NETGEAR earned from the Adjusted SSPPU (per unit) by subtracting NETGEAR's operating expenses (per unit) from the gross profit earned from the Adjusted SSPPU (per unit). For the gross profit earned from the Adjusted SSPPU (per unit). For the gross profit earned from the Adjusted SSPPU (per unit). For the gross profit earned from the Adjusted SSPPU (per unit). For the gross profit earned from the Adjusted SSPPU (per unit). For the gross profit earned from the Adjusted SSPPU (per unit) per unit) from the gross profit earned from the Adjusted SSPPU (per unit) per unit) from the gross profit earned from the Adjusted SSPPU (per unit) per unit). For the gross profit earned from the Adjusted SSPPU (per unit) per unit) from the gross profit earned from the Adjusted SSPPU (per unit) per unit). For the gross profit earned from the Adjusted SSPPU (per unit) per unit). For the gross profit earned from the Adjusted SSPPU (per unit) per unit). For the gross profit earned from the Adjusted SSPPU (per unit) per unit) from the gross profit earned from the Adjusted SSPPU (per unit) per unit). For the gross profit earned from the Adjusted SSPPU (per unit) per unit) from the gross profit earned from the Adjusted SSPPU (per unit) per unit) from the gross profit earned from the Adjusted SSPPU (per unit) from the gross profit earned from the Adjusted SSPPU (per unit) from the gross profit earned from the Adjusted SSPPU (per unit) from the gross profit earned from the Adjusted SSPPU (per unit) from the gross profit earned from the Adjusted SSPPU (per unit) from the gross profit earned from the Adjusted SSPPU (per unit) from the gross profit earned from the Adjusted SSPPU (per unit) from the gross profit earned from the Adjusted SSPPU (per unit) from the gross profit earned from the Adjusted SSPPU (per unit) from the gross profit earned from the
- Seventh, I then calculated the incremental value of routing user data using different software radios (or transceivers), intelligent node placement, and dynamic network reconfiguration (per unit) by multiplying the operating profit from the Adjusted SSPPU (per unit) by the relative premium that customers are willing to pay to purchase the Accused Products (the "Attribution Rate") (per unit). Self arrived at the relative premium that customers are willing to pay to purchase the Accused Products by comparing the price of certain of the

<sup>&</sup>lt;sup>50</sup> Affirmative Holzen Report, ¶ 177. I understand that NETGEAR has challenged my selection of as the SSPPU for infringement of the '442 Patent if the '017 Patent and '893 Patent are not infringed. However, the selection of the sast he SSPPU in this matter is appropriate for the reasons set forth in the Holzen Reports. As discussed therein, it is the lowest-priced unit sold that incorporates the fewest number of technical features. (Affirmative Holzen Report, ¶ 177). I understand that NETGEAR has not argued that separate SSPPUs should be considered for each of the '442, '017, and '893 Patents.

<sup>&</sup>lt;sup>51</sup> Affirmative Holzen Report, ¶ 177; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>52</sup> Affirmative Holzen Report, ¶ 178; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>53</sup> Affirmative Holzen Report, ¶ 179; Second Supplemental Schedule 3.1.

<sup>&</sup>lt;sup>54</sup> Affirmative Holzen Report, ¶ 179; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>55</sup> Affirmative Holzen Report, ¶ 180; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>56</sup> Affirmative Holzen Report, ¶ 181; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>57</sup> Affirmative Holzen Report, ¶ 181.

<sup>&</sup>lt;sup>58</sup> Affirmative Holzen Report, ¶ 182: Second Supplemental Schedule 3.0.

and based on the retail price of third-party or NETGEAR products. <sup>59</sup> I understand that the selected benchmark products used in this analysis are comparable to the selected Accused Products but for the inclusion of certain mesh functionality. <sup>60</sup> As previously discussed in the Holzen Reports, this apportioned value of the SSPPU reflects the apportioned incremental value associated with the routing of user data using different software radios (or transceivers), intelligent node placement, and dynamic network reconfiguration. <sup>61</sup> For purposes of the Holzen Reports, I assumed that intelligent node placement and the dynamic network reconfiguration were associated with the technology of the '017 and '893 Patents, respectively. <sup>62</sup> While I understand that the Court has since found that the Accused Products do not infringe the '017 and '893 Patents, this calculation remains an appropriate part of the methodology in calculating the incremental value of the technology that infringes the '442 Patent over the technologically-closest conventional products in the marketplace.

Eighth, I then calculate the incremental value of only the '442 Patent (per unit) by allocating of the incremental value of routing user data using different software radios (or transceivers), intelligent node placement, and dynamic network reconfiguration per unit) to the '442 Patent. This analysis is based on data obtained from

Specifically,

18. This calculation of incremental value attributable to the '442 Patent credits back to NETGEAR per unit for the value associated with mesh improvements not covered

 $<sup>^{59}</sup>$  Affirmative Holzen Report, ¶ 182; Second Supplemental Schedule 5.0. *See also* Second Supplemental Schedule 5.1 and Second Supplemental Schedule 5.2 for alternate Attribution Rate calculations.

<sup>&</sup>lt;sup>60</sup> Affirmative Holzen Report, ¶ 182.

<sup>&</sup>lt;sup>61</sup> Affirmative Holzen Report, ¶¶ 67, 182.

<sup>&</sup>lt;sup>62</sup> Affirmative Holzen Report, ¶ 67.

<sup>63</sup> Affirmative Holzen Report, ¶¶ 192-195; Second Supplemental Schedule 3.0.

<sup>&</sup>lt;sup>64</sup> Affirmative Holzen Report, ¶¶ 193-194; Second Supplemental Schedule 6.0.

<sup>&</sup>lt;sup>65</sup> Affirmative Holzen Report, ¶ 194; Second Supplemental Schedule 6.0.

<sup>&</sup>lt;sup>66</sup> Affirmative Holzen Report, ¶ 194; Second Supplemental Schedule 6.0.

# TrackThings, LLC v. NETGEAR, Inc. Calculation of Patent Allocation Second Supplemental Schedule 6.0

- [1] Interviews with Dr. Bims.
- [2] Second Supplemental Schedule 6.1
- [3] Second Supplemental Schedule 6.2
- [4] Second Supplemental Schedule 6.3
- [5] Second Supplemental Schedule 6.4
- [6] Second Supplemental Schedule 6.5

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Case No. 22-981-JLH

(Consolidated)

Plaintiff,

**JURY TRIAL DEMANDED** 

v.

**NETGEAR, INC.,** 

Defendant.

TRACKTHINGS LLC'S REPLY IN SUPPORT OF ITS MOTION IN LIMINE NO. 2

Netgear opposes TrackThings' MIL 2 on the assumption that Mr. Holzen's analysis for the '442 patent is "intractably intertwined" with the previously-asserted '017 and '893 patents. Opp. at 1. Not so. In his expert reports, Mr. Holzen calculated a separate, independent incremental value for each asserted patent—e.g., "the incremental value of only the '442 Patent (per unit)." Opp. Ex. 1 ¶¶ 194-195; cf. Opp. Ex. 4 ¶ 17. As Mr. Holzen explained in his Supplemental Report, his analysis focused on the technologies allegedly associated with the underlying patents, not the patents themselves. Opp. Ex. 4 ¶ 17. He determined "the apportioned incremental value associated with the routing of user data using different software radios (or transceivers), intelligent node placement, and dynamic network reconfiguration," i.e., the technology embodied in the accused products Id. That he "assumed that intelligent node placement and the dynamic network reconfiguration were associated with the technology of the '017 and '893 Patents" is inapposite—his analysis was based on the technological features themselves. Id. Mr. Holzen's isolation of the value of the technological features associated with the '442 patent thereby permits testimony about damages for infringement of the '442 patent without reference to the '893 or '017 patent.

Netgear acknowledges that Mr. Holzen's supplemental opinions avoid referencing the '893 and '017 patents, *e.g.*, "relabel[ing] . . . tables to remove reference to the '017 and '893 patents[.]" Opp. at 3. This was not done to "insulate Mr. Holzen from effective cross-examination" (*id.*) as Netgear argues, but rather to insulate the Parties and the Court from the undisputably prejudicial effect of Netgear arguing to the jury "that the '017 and '893 patents are not, in fact, infringed" (*id.*), subject matter not relevant to the '442 patent at issue, which has been confirmed to be excludable by this Court and others. *See, e.g., IOENGINE, LLC v. PayPal Holdings, Inc.*, No. 18-452-WCB, 2022 U.S. Dist. LEXIS 127876, at \*27 (D. Del. June 15, 2022) ("introduction of evidence regarding patents that are not asserted in these cases may confuse or mislead the jury.").

Respectfully submitted, Dated: New York, NY

June 20, 2025

#### MCCARTER & ENGLISH, LLP

#### /s/ Alexandra M. Joyce

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Attorneys for Plaintiff TrackThings LLC

# **EXHIBIT 13C**

TrackThings' MIL 3 (including NETGEAR'S Opposition and TrackThings' Reply)

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Case No. 22-981-JLH (Consolidated)

Plaintiff,

JURY TRIAL DEMANDED

v.

**NETGEAR, INC.,** 

Defendant.

TRACKTHINGS LLC'S MOTION IN LIMINE NO. 3

Plaintiff TrackThings LLC ("TrackThings") respectfully submits the following motion *in limine*.

I. MIL NO. 3: The parties shall be precluded from introducing evidence, testimony, or argument regarding Netgear's own patents (e.g., any Netgear patents allegedly related to the Accused Products).

The Parties should be precluded from introducing, relying on, or making references to any of Netgear's own patents because those patents are irrelevant to this case and any probative value would be outweighed by severe prejudice to TrackThings under Rules 401 and 403. Any mention of Netgear's own patents would also confuse the jury and this Court has consistently excluded such testimony on these grounds. *See Zimmer v. Stryker*, No. 16-679, 2019 WL 9244877, at \*1 (D. Del. Mar. 15, 2019) (allowing introduction of the defendant's patent "would invoke many of the Rule 403 concerns, including having a mini-trial on the meaning and validity of the [defendant's] patent"); *Sonos, Inc. v. D&M Holdings Inc.*, No. 14-1330, 2017 WL 5633204, at \*1 (D. Del. Nov. 21, 2017) (introducing defendant's own patents "could mislead the jury into believing that [the defendant's] patents give it the right to practice technology that is covered by those patents.").

During the meet and confer process, Netgear agreed that it would not rely on its own patents to make any non-infringement arguments.<sup>1</sup> However, Netgear argued its own patents were (a) relevant to what is valuable to customers about the accused products and (b) that because TrackThings asked Netgear's witnesses about certain Netgear patents during depositions, this motion *in limine* is now inappropriate. Neither argument is persuasive.

infringement of someone else's patent." *Prolitec Inc. v. ScentAir Techs., LLC*, No. CV 20-984-WCB, 2024 WL 341342 (D. Del., Jan. 30, 2024) (citing *Bio-Technology General Corp. v.* 

Genentech, Inc., 80 F.3d 1553, 1559 (Fed. Cir. 1996).)

1

<sup>&</sup>lt;sup>1</sup> If the Court was not inclined to grant the motion *in limine* in full, at a minimum, Netgear should not be allowed to reference its own patents to make any argument related to infringement because, as this Court has explained, "the existence of one's own patent does not constitute a defense to

As to the first point, any testimony that Netgear may present at trial to somehow tie its patents to features customers find valuable would be inadmissible because neither Netgear nor any of its experts made this argument during discovery. Netgear never alleged that its own patents or the disclosures in those patents are somehow germane to the value of any particular technology. Instead, Netgear produced and the parties relied on a variety of consumer surveys to show what matters to customers. Of the produced customer surveys, four *ask roughly 50 or more questions*, that demonstrate which product features are important to customers, nullifying Defendant's purported need for its patents. *See e.g.*, Ex. A, NETGEAR-TRACK-009832, Orbi WiFi 6E + Orbi WiFi Survey, (

); see also, Ex. B-E.

Regarding the second point, TrackThings is unaware of any authority that stands for the proposition that topics discussed in a deposition cannot be the subject of a motion *in limine*. And indeed, Netgear's counsel repeatedly objected to TrackThings' questions about Netgear's patents essentially shutting down the line of questioning as Netgear's witness refused to substantively answer questions about those patents:

Q. And so does this patent relate to NETGEAR's mesh products?

MR. CHEN: Objection. Calls for a legal conclusion. Outside the scope of this deposition.

THE DEPONENT: I cannot say that.

. . .

Q. In column 3, line 11, what is meant by "a 12:59:55 daisy chain approach"?

MR. CHEN: Objection. Outside the scope of the deposition to the extent you are asking about this patent. And calls for legal conclusion.

THE DEPONENT: I'm not an attorney. I don't want to interpret the patents.

Ex. F, Emmanuel Tr. at 94:15-19; 96:15-21. How a series of unanswered deposition questions opens the door to otherwise prejudiced trial testimony remains unexplained. Nor can there be any dispute that introduction of this evidence would confuse the jury and subject TrackThings to undue prejudice. Netgear's patents provide limited probative value, which is substantially outweighed by its high risk of prejudice and confusion. For the reasons stated above the Court should preclude any evidence, testimony, or argument related to Netgear's own patents.

Dated: New York, NY April 1, 2025 Respectfully submitted,

#### MCCARTER & ENGLISH, LLP

/s/ Alexandra M. Joyce

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Attorneys for Plaintiff TrackThings LLC

# Exhibit A

This Document Will Be Submitted to the Court in Native Format

DOCUMENT PRODUCED IN NATIVE FORMAT

# Exhibit B

This Document Will Be Submitted to the Court in Native Format

DOCUMENT PRODUCED IN NATIVE FORMAT

# **Exhibit C**

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# **Exhibit D**

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# Exhibit E

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DOCUMENT PRODUCED IN NATIVE FORMAT

# Exhibit F

Page 1

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

VS.

Case No. 22-981-RGA-JLH

NETGEAR, INC.,

Defendant.

\_\_\_\_\_

VIDEO DEPOSITION OF NETGEAR'S 30(b)(6) CORPORATE

REPRESENTATIVE & INDIVIDUALLY - JOSEPH EMMANUEL

Palo Alto, California

Wednesday, December 13, 2023

Reported by:

REBECCA L. ROMANO, RPR, CSR, CCR California CSR No. 12546 Nevada CCR No. 827 Oregon CSR No. 20-0466 Washington CCR No. 3491

Job No.: 8321

	Page 94		Page 9
1	(Exhibit 20 was marked for identification 12:55:13	1	A. Yes. 12:58:54
2	by the Court Reporter and is attached hereto.)	2	Q. Is that also the case for an Orbi mesh
3	Q. (By Mr. Singer) Have you ever seen this	3	WiFi system?
4	document before?	4	MR. CHEN: Objection. Calls for a legal
5	A. Yes. 12:55:33	5	conclusion. Outside the scope of this deposition. 12:59:0
6	Q. What is it?	6	Q. (By Mr. Singer) Sorry, strike that.
7	A. It's one of our patents on the dedicated	7	In an Orbi mesh WiFi system, where are
8	backhaul.	8	nodes connected by a 5-gigahertz dedicated backhaul
9	Q. Are you the first named inventor on this	9	at times?
10	patent? 12:55:47	10	THE DEPONENT: Can you repeat? 12:59:2
11	A. Yes.	11	Q. (By Mr. Singer) Sorry, in a NET
12	Q. And the applicant and the assignee are	12	sorry, strike that.
13	NETGEAR, Inc.; is that correct?	13	In an Orbi 5-gigahertz
14	A. Yes, that is correct.	14	Okay. That's fine.
15	Q. And so does this patent relate to 12:55:57	15	In column 3, line 11, what is meant by "a 12:59:55
16	NETGEAR's mesh products?	16	daisy chain approach"?
17	MR. CHEN: Objection. Calls for a legal	17	MR. CHEN: Objection. Outside the scope
18	conclusion. Outside the scope of this deposition.	18	of the deposition to the extent you are asking
19	THE DEPONENT: I cannot say that.	19	about this patent. And calls for legal conclusion.
20	Q. (By Mr. Singer) Can you please state the 12:56:18	20	THE DEPONENT: I'm not an attorney. I 01:00:
21	patent number for the record?	21	don't want to interpret the patents.
22	A. You want me to read?	22	Q. (By Mr. Singer) Okay. Can you refer
23	Yeah, US 10,681,698 B2.	23	back to Exhibits 12 and 13.
24	Q. Can you turn to Figure 1, please?	24	A. You said 12 and 13?
25	Do you see where it says "Orbi 12:56:45	25	Yes. 01:01:55
	Page 95		Page 9
1	Satellite"? 12:56:46	1	Q. Okay. So this refers to a tri-band Orbi 01:01:55
2	A. Yes.	2	system; is that correct?
3	Q. What is that referring to?	3	A. Yes.
4			
	A liist showing example the satellite	4	
5	A. Just showing example, the satellite.  O. And why is the word "Orbi" in there?  12:56:56	4 5	Q. And when connected to an Orbi tri-band
5 6	Q. And why is the word "Orbi" in there? 12:56:56	5	Q. And when connected to an Orbi tri-band system, a client can receive Internet from the 01:02:12
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1 2	I, Rebecca L. Romano, a Registered	1 2	Page	Line	
	Professional Reporter, Certified Shorthand Reporter, Certified Court Reporter, do hereby	3	From	LIIIC	Reasonto
3 4	certify:	4	Page	Line	Reason
5		5	From		to
6	That the foregoing deposition testimony was taken remotely before me at the time and place	6	Page	Line	Reason
7	therein set forth; that any deponent in the	7	From		to
8	foregoing deposition, prior to testifying, was	8	Page	Line	Reason
9	administered an oath; that a record of the	9	From		to
10	deposition was recorded stenographically by me and	10	Page	Line	Reason
11	which was thereafter transcribed under my	11	From	Line	to
12	direction; that the foregoing transcript is a true	12 13	Page From	Line	
13	record of the testimony given.	14	Page	Line	to
14	Further, that if the foregoing pertains to the	15	From	Line	Reason to
15	original transcript of a deposition in a Federal	16	Page	Line	Reason
16	Case, before completion of the proceedings, review	17	From		to
17	of the transcript [X] was [] was not requested.	18	Page		Reason
18	I further certify I am neither financially	19	From		to
19	interested in the action nor a relative or employee	20	Page	Line	Reason
20	of any attorney or any party to this action.	21	From		to
21	IN WITNESS WHEREOF, I have subscribed my	22			e above changes, I certify that
22	name this 18th day of December, 2023.			cript is true	
23	name this four day of December, 2023.	23		cript is true	have been made. I certify that
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	Rebecca L. Romano, RPR, CCR				
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## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

NETGEAR, INC.,

Defendant.

C.A. No. 22-981-JLH (CONSOLIDATED)

JURY TRIAL DEMANDED

NETGEAR, INC.'S OPPOSITION TO TRACKTHINGS LLC'S MOTION IN LIMINE NO. 3 TO EXCLUDE EVIDENCE, TESTIMONY, OR ARGUMENT REGARDING NETGEAR'S OWN PATENTS

### TABLE OF EXHIBITS<sup>1</sup>

Ex. 1	Abbott Diabetes Care v. Dexcom, C.A. No. 21-977-KAJ, D.I. 555 (D. Del. Nov. 9, 2023)
Ex. 2	Excerpted Rebuttal Expert Report of Douglas Kidder Regarding Damages, dated July 9, 2024
Ex. 3	Excerpted Plaintiff's Deposition Designations, dated March 20, 2025
Ex. 4	Plaintiff's Proposed Final Jury Instructions, dated March 20, 2025
Ex. 5	U.S. Patent No. 10,292,159, produced at TT_N-0008743 – TT-N-0008821
Ex. 6	Excerpted Transcript from the December 13, 2023 Deposition of Joseph Emmanuel
Ex. 7	U.S. Patent No. 10,681,698 marked as Exhibit 20 from the December 13, 2023 Deposition of Joseph Emmanuel
Ex. 8	U.S. Patent No. 10,292,159 marked as Exhibit 27 from the December 13, 2023 Deposition of Joseph Emmanuel
Ex. 9	Excerpted Transcript from the January 5, 2024 Deposition of Anna Lam
Ex. 10	Excerpted Plaintiff's Trial Exhibit List
Ex. 11	Excerpted Supplemental Expert Report of Henry Houh, Ph.D., served May 21, 2025

<sup>&</sup>lt;sup>1</sup> Full versions of Exs. 2 and 11 can be found at D.I. 248, Ex. 24 and D.I. 375, Ex. J, respectively.

NETGEAR's patents are highly relevant—even TrackThings has elicited evidence about NETGEAR's patents throughout this litigation—and any alleged risk of prejudice and confusion can be cured by an appropriate jury instruction. This Court should deny TrackThings' motion seeking to exclude NETGEAR's patents.<sup>2</sup>

### A. NETGEAR's Patents Are Relevant to Its Case and to Rebut Evidence That TrackThings Presents During Trial

NETGEAR will not argue that its patents are evidence of non-infringement,<sup>3</sup> but the patents are relevant for other admissible reasons. First, NETGEAR's fact witnesses—including named inventor Mr. Emmanuel—should be able to describe the innovative work NETGEAR performed on the accused devices, including any patents NETGEAR obtained based on that work. TrackThings should not be permitted to falsely suggest to the jury that it is the only innovator with patented WiFi technology. NETGEAR is entitled to tell its own story of innovation.

Second, NETGEAR's patents are relevant to multiple damages issues. For example, NETGEAR's patents are "relevant to improvements added by the [alleged] infringer in creating the accused [] device[s]" (*Georgia-Pacific* factor 13). *Wonderland NurseryGoods v. Thorley Indus.*, 2014 WL 241751, at \*2 (W.D. Pa. Jan. 22, 2014); Ex. 1, *Abbott Diabetes Care*, C.A. No. 21-977-KAJ, D.I. 555, at 4; (Ex. 2 at ¶¶ 168-69; Ex. 11 at ¶¶ 22 n.6, 27). NETGEAR's patents are relevant evidence of NETGEAR's own substantial technical contributions that drive the value (including reliability, coverage, speed) of the accused devices—and are relevant to rebut TrackThings' argument that reliability, coverage, and speed should be solely attributed to the '442 patent. NETGEAR's expert, Dr. Houh, cited NETGEAR's patents in his supplemental report. But,

<sup>&</sup>lt;sup>2</sup> Other courts have denied similar motions; relevant cases are cited throughout this brief.

<sup>&</sup>lt;sup>3</sup> TrackThings' argument in its n.1 should be "denied as moot insofar as [TrackThings] argues that [NETGEAR] should be precluded from using its patents as proof of non-infringement[.]" (Ex. 1, *Abbott Diabetes Care v. Dexcom*, C.A. No. 21-977-KAJ, D.I. 555, at 2 (D. Del. Nov. 9, 2023).)

in any case, NETGEAR is permitted to introduce relevant factual evidence through the witness(es) of its choosing. *Cf. Abbott Point of Care v. Epocal*, 868 F. Supp. 2d 1310, 1328-29 (N.D. Ala. 2012) (allowing evidence of defendant's patents to come in, despite plaintiff's argument that the patents were not relied upon by defendant's expert or fact witnesses). NETGEAR also has a agreement that TrackThings has pointed to—including in its deposition designations for Ms. Lam (another witness who may testify at trial)—and NETGEAR must be able to explain the market context for that —*e.g.*, its inclusion of NETGEAR patents—in order to explain its (non)comparability. (Ex. 3.)

Third, to the extent TrackThings maintains its willfulness arguments, NETGEAR is entitled to present its independent innovation story to rebut any suggestion of copying. *Wonderland*, 2014 WL 241751, at \*3; *see also Sioux Steel v. Prairie Land Mill Wright Servs.*, 2022 WL 17082541, at \*3 (N.D. Ill. Nov. 18, 2022) (citing cases).

### B. TrackThings' Conclusory Allegations of Risk of Prejudice and Confusion Are Put to Rest by Its Own Proposed Curative Jury Instruction

Introducing NETGEAR's patents would not be prejudicial or confusing. Because NETGEAR will not use its patents to argue non-infringement, the prejudice and confusion that TrackThings seems most concerned about will not materialize, such that there are no concerns under Rule 403.<sup>4</sup> In any event, any risk of prejudice or confusion could be addressed by a curative

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<sup>&</sup>lt;sup>4</sup> In *Zimmer Surgical v. Stryker*, the Court concluded that defendant's patent had little to no probative value on the issue of patentability—thus, being outweighed by "the confusion and unfair prejudice" that would arise from "what are sure to be statements that [the patent] covers the [accused] systems." 2019 WL 9244877, at \*1 (D. Del. Mar. 15, 2019). Here, NETGEAR is neither using its patents as evidence of patentability nor as a non-infringement defense. *See*, *supra*, § A. TrackThings cites *Sonos v. D&M Holdings*, 2017 WL 5633204, at \*1 (D. Del. Nov. 21, 2017) for the proposition that introducing defendant's patents could lead the jury to believe that the patents give defendant the right to practice the '442 patent. But, as explained, NETGEAR will not use its patents for non-infringement positions and both parties agree with TrackThings' proposed curative jury instruction. (*See*, *supra*, at §§ A-B; TrackThings' Motion *in Limine* No. 3 at 1.)

instruction to the jury. *See, e.g., Wonderland*, 2014 WL 241751, at \*3; *Sioux Steel*, 2022 WL 17082541 at \*3; *Finjan v. Sophos*, 2016 WL 4560071, at \*8 (N.D. Cal. Aug. 22, 2016); *Abbott*, 868 F. Supp. 2d at 1329. TrackThings has already proposed such a curative instruction in its first draft of final jury instructions and NETGEAR agrees with the instruction. (Ex. 4 at 17.)

### C. NETGEAR's Arguments Are Supported by the Fact That TrackThings Has Introduced NETGEAR's Patents Throughout This Litigation

TrackThings found NETGEAR's patents relevant when it brought them into this case and used them for its own benefit on dispositive motions. TrackThings' pretrial filings have alerted NETGEAR that it may do so again at trial. TrackThings should not be able to use NETGEAR's patents when it suits TrackThings but preclude NETGEAR from using the same evidence.

During fact discovery, TrackThings produced one of NETGEAR's patents, and asked about NETGEAR's patents during Mr. Emmanuel's deposition and about a involving NETGEAR's patents during Ms. Lam's deposition.<sup>5</sup> (Ex. 5; Ex. 6 at 33-34, 94-96, 139-140; Ex. 7; Ex. 8; Ex. 9 at 91-93, 110-113.) During dispositive motion briefing, TrackThings relied on NETGEAR's patents in making its arguments. (*See* D.I. 266 at 12 n.2; D.I. 268 at ¶ 13-14; D.I. 272 at ¶ 18-19.) And even now at the pre-trial stage of litigation, TrackThings included NETGEAR's patents on its trial exhibit list, designated deposition testimony from Anna Lam discussing a that involves NETGEAR's patents, and proposed a jury instruction on the issue. (Ex. 10; Ex. 3 at 19-20; Ex. 4 at 17.) This is additional support that NETGEAR's patents are relevant and not prejudicial.

For the foregoing reasons, the Court should deny TrackThings' motion in limine no. 3.

3

<sup>&</sup>lt;sup>5</sup> As counsel is aware, a deponent is still required to answer in spite of non-privilege-type objections—and, here, NETGEAR's fact witnesses *did* answer all of TrackThings' questions to the best of their ability, even though not designated on the topic of NETGEAR's patents. TrackThings' choice not to ask further factual questions is not a reason to prejudice NETGEAR.

Dated: June 13, 2025 Respectfully submitted,

/s/ James L. Higgins

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# EXHIBIT 1

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

ABBOTT DIABETES CARE, INC. and ABBOTT DIABETES CARE LIMITED,	)	
Plaintiffs,	)	
W.	)	Civil Action No. 21-977 (KAJ)
V.	)	
DEXCOM, INC.,	)	
Defendant.	)	
	- )	

#### **ORDER**

The Court, having heard the parties at oral argument on October 10, 2023, made rulings from the bench as follows:

#### IT IS HEREBY ORDERED that:

- DexCom's Motion to Strike Plaintiffs' New Damages Opinion (D.I. 500) is DENIED.
- Abbott's Motion to Strike DexCom's Argument in Opposition to Lost Profits (D.I. 538) is DENIED.
- Abbott's Request to Prevent the Jury from Hearing DexCom's Inventorship Defense (D.I. 533 at 1-3) is DENIED.
- DexCom's Request Regarding Evidence Subject to FRE 408 and the Parties' NDA (D.I. 533 at 5) is DENIED.
- DexCom's Motion in Limine No. 3 (D.I. 496 Ex. 8D) to Exclude Evidence of Willfulness, Including Alleged Copying by DexCom is DENIED.

 Abbott's Motion in Limine No. 2 (D.I. 495 Ex. 8P at 14) to Preclude Dexcom's Experts from Using the Patent's Specification, Prosecution History, or Other Evidence to Interpret the Plain Meaning of the Patents' Claims or to Distinguish Between the Claims and the Accused Infringing Products is GRANTED.

The Court reserved ruling on DexCom's Motion in Limine No. 1 and will rule on it in conjunction with the *Daubert* motion due on the same issue.

The Court reserved ruling on Abbott's Motion in Limine No. 3 and now rules as follows:

#### IT IS HEREBY ORDERED that:

• Abbott's Motion in Limine No. 3 (D.I. 495 Ex. 8P at 25) that DexCom Should be Precluded from Introducing Evidence, Testimony or Argument Suggesting that Any Accused Products or any Abbott Products (Past or Present) Are or Were Covered by DexCom Patents is DENIED AS MOOT in part and DENIED in part.

Abbott wishes to preclude DexCom from asserting DexCom's patents (1) as proof DexCom did not infringe Abbott's patents, (2) as evidence that DexCom has its own patent suit against Abbott, and (3) as a defense to willful infringement. (D.I. 495 Ex. 8P at 25-26, 29.) DexCom "agrees not to introduce evidence of DexCom's patents that cover Abbott products" and "that its patents have nothing to do with infringement of Abbott's patents." (*Id.* at 30 n.12, n.13.) Therefore, Abbott's motion is DENIED AS MOOT insofar as Abbott argues that DexCom should be precluded from using its patents as proof of non-infringement or as evidence that DexCom sued it.

"A defendant's patents are relevant to rebut a claim of willful infringement." Intelligent Verification Sys., LLC v. Microsoft Corp., No. 2:12-cv-525, 2015 WL 1518099, at \*11 (E.D. Va. Mar. 31, 2015). They may also be relevant in showing that "features patented by Dexcom ... are the key demand drivers for Dexcom products." (D.I. 495 Ex. 8P at 31.) But Abbott claims that DexCom has not been forthcoming about which patents cover DexCom's products. (Id. at 26.) At first, DexCom provided Abbott with 639 patents, a number we considered outrageous, and then, in a supplement, DexCom listed 12 patents, gave a short explanation of one claim from each, and said "[t]he DexCom GP practices at least claim 1" of the corresponding patent. (Id. at 27-28; Abbott Ex. F.) DexCom's expert cited the supplement in her damages report but does not explain how the patents relate to DexCom's products. (Id. at 31-32.) DexCom claims that it did enough to divulge its contentions and that Abbott did not challenge them for five months. (Id. at 33-34.) At the motion in limine hearing, DexCom said the patents' inventors will use the narrative explanations from the supplement to testify about their inventions and how they relate to DexCom's products. (10/10/23 Tr. at 137:6-9; 139:5-7; 140:19-23.)

Abbott made a convincing showing that the narrative explanations skip certain facts about how DexCom's products practice the corresponding patents. (*Id.* at 133:20-134:10.) I thus agree that the interrogatory response is inadequate, and Abbott is entitled to depose DexCom's inventors at DexCom's expense. (*See id.* at 144:6-10.) The motion

in limine is DENIED, however, insofar as Abbott wishes to exclude evidence of DexCom's patents, as they may be relevant to its willfulness defense and to demonstrate that DexCom's innovations drove demand for its products.

Kent A. Jordan, Circuit Judge

Sitting by designation

DATE: November 9, 2023 Wilmington, Delaware

# EXHIBIT 2

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS, LLC.,		§	
	Plaintiff,	§ §	
NETGEAR, INC.,		<b>§</b>	~
		§	C.A. No. 1:22-cv-00981-JLH
	Defendant	§	
		§	
		§	
		§	
		§	

## EXPERT REPORT OF DOUGLAS KIDDER REGARDING DAMAGES

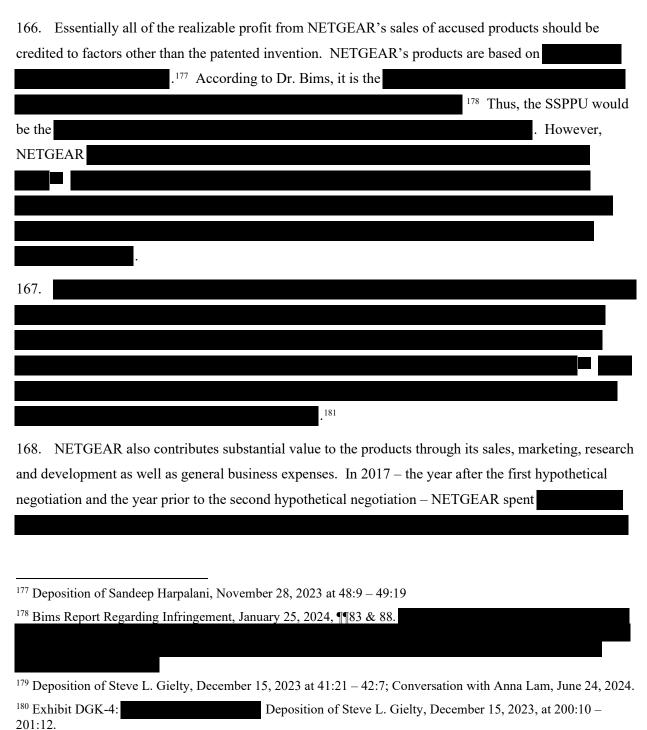
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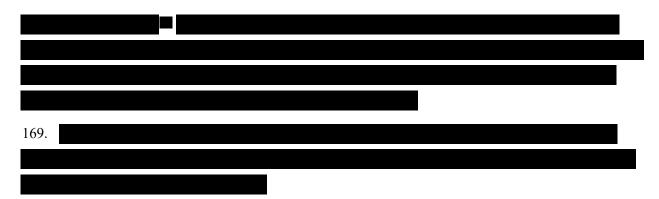
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#### 5.14 GEORGIA-PACIFIC FACTOR 13

The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.



<sup>&</sup>lt;sup>181</sup> Conversation with Dr. Houh, June 24, 2024; Deposition of Steve L. Gielty, December 15, 2023, at 48:1 – 19.



170. This factor is neutral in my consideration of a reasonable royalty for any of the Patents-In-Suit.

#### 5.15 GEORGIA-PACIFIC FACTOR 14

The opinion testimony of qualified experts.

171. I have discussed the Patent-In-Suit and other technical issues with Dr. Henry Houh. 183

#### 5.16 GEORGIA-PACIFIC FACTOR 15 - CONCLUSIONS

The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount that a prudent licensee—who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention—would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.

172. As described previously, it is my opinion that TrackThings and NETGEAR would engage in two separate negotiations for rights to the Patents-In-Suit. The first negotiation would occur in or around August 2016 and involve rights to the '442 and '017 Patents. The second negotiation would occur in or around October 2018 for rights to the '893 Patent.

173.			

<sup>&</sup>lt;sup>182</sup> NETGEAR 10-K for the year ending December 31, 2017.

<sup>&</sup>lt;sup>183</sup> Conversation with Dr. Houh, June 24, 2024.

#### 7. SIGNATURE PAGE

- 248. I certify that, to the best of my knowledge and belief:
  - The statements of fact in this report are true and correct.
  - The reported analyses, opinions and conclusions are limited only by the reported assumptions and are my personal, unbiased and professional analyses, opinions and conclusions.
  - I have no personal interest or bias with respect to the parties involved.
  - My compensation is not contingent on an action or event resulting from the analyses, conclusions or opinions of this report.

Douglas G. Kidder

July 9, 2024

# EXHIBIT 3

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Case No. 22-981-JLH (Consolidated)

Plaintiff,

JURY TRIAL DEMANDED

v.

**NETGEAR, INC.,** 

Defendant.

### **EXHIBIT 12**

PLAINTIFF'S DEPOSITION DESIGNATIONS

Plaintiff TrackThings LLC ("Plaintiff" or "TrackThings"), hereby identify its deposition designations for trial pursuant to Federal Rule of Civil Procedure 26(a)(3)(A)(ii) and the Court's Scheduling Order, Order Governing Proceedings, and Pretrial Standing Order.

Plaintiff respectfully reserve the right to amend or supplement this list as necessary. Plaintiff further reserve the right to use deposition testimony not on this list for the purposes of impeachment, cross-examination, rebuttal, and/or refreshing a witness's recollection.

A number of motions and other issues are currently pending before the Court and between the parties which may affect Plaintiff's identification of counter-counter-designated testimony and objections, including summary judgment motions, *Daubert* motions, and motions *in limine*. Accordingly, Plaintiff reserve the right to revise or supplement this disclosure in light of the Court's orders on motions and evidentiary issues, or other developments before trial. Plaintiff further reserve its right to offer additional evidence at trial not identified in its deposition designations with respect to claims and defenses for which it does not carry the burden of proof, and for purposes of impeachment and rebuttal. To the extent Netgear truncates any of their designations, Plaintiff reserve the right to use omitted portions of testimony or any of Netgear's identified designations or counter-designations. Plaintiff also reserve the right to use any of its affirmative designations of the below-listed witnesses as counter-designations.

### 

### **Anna Lam Deposition Designations** Deposition Taken: January 5, 1994

TrackThings Designations	Netgear's Objections	Netgear's Counter Designations	TrackThings' Objections	TrackThings' Counter- Counter Designations	TrackThings' Objections	Netgear's Designations
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# EXHIBIT 4

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Case No. 22-981-JLH (Consolidated)

Plaintiff,

JURY TRIAL DEMANDED

v.

**NETGEAR, INC.,** 

Defendant.

### TRACKTHINGS LLC'S PROPOSED FINAL JURY INSTRUCTIONS

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#### 1. GENERAL INSTRUCTIONS

Members of the jury, now it is time for me to instruct you about the law that you must follow in deciding this case. Please listen very carefully to everything I say. Each of you has been provided a copy of these instructions. You are welcome to read along as I deliver them.

You will have your written copy of these instructions, as well as the preliminary instructions, with you in the jury room for your reference during your deliberations. You will also have a verdict form, which will list the questions that you must answer to decide this case.

I will start by explaining your duties and the general rules that apply in every civil case. Then I will explain some rules that you must use in evaluating particular testimony and evidence. Then I will explain the positions of the parties and the law you will apply in this case. And last, I will explain the rules that you must follow during your deliberations in the jury room and the possible verdicts that you may return. In following my instructions, you must follow all of them, including the ones the Court gave you at the start of the case and the ones I have given during trial, and not single out some and ignore others. They are all important.

#### 1.1 Juror's Duties

You have two main duties as jurors. The first is to decide what the facts are from the evidence that you saw and heard in court.

Deciding what the facts are is your job, not mine, and nothing that I have said or done during this trial was meant to influence your decision about the facts in any way. You are the sole judges of the facts.

Your second duty is to take the law that I give you, apply it to the facts, and decide under the appropriate burden of proof which party should prevail on any given issue. It is my job to instruct you about the law, and you are bound by the oath you took at the beginning of the trial to follow the instructions that I give you, even if you personally disagree with them. This includes the instructions that I gave you before and during the trial, and these instructions. All of the instructions are important, and you should consider them together as a whole.

Perform these duties fairly. Do not guess or speculate, and do not let any bias, sympathy, or prejudice you may feel toward one side or the other influence your decision in any way.

#### 1.2 Burdens of Proof

In any legal action, facts must be proven by a required standard of evidence, known as the "burden of proof." In a patent case such as this, there are two different burdens of proof that are used. The first is called "preponderance of the evidence." The second is called "clear and convincing evidence." I told you about these two standards of proof during my preliminary instructions to you and I will now remind you what they mean.

TrackThings asserts that Netgear infringes the Asserted Patent. TrackThings also alleges that Netgear's infringement of the Asserted Patent was willful. A party asserting patent infringement has the burden of proving infringement, whether that infringement was willful, and the amount of monetary damages, by a preponderance of the evidence.

That means, for TrackThings to prevail on each of its claims, it must prove to you, in light of all the evidence, that what it claims is more likely true than not. To say it differently: if you were to put the favorable and unfavorable evidence on opposite sides of a scale, TrackThings has to make the scales tip, to any degree, to TrackThings' side in each instance. If the scale should remain equal or tip in favor of Netgear, you must find in favor of Netgear.

You may have heard of the term "proof beyond a reasonable doubt." That is a stricter standard of proof and it applies only to criminal cases. It does not apply in civil cases such as this. So you should put it out of your mind.

In addition to denying TrackThings' claims that it infringes, Netgear asserts that the asserted claims are invalid. A party challenging the validity of a patent—in this instance, Netgear—has the burden to prove that the asserted claims are invalid by clear and convincing evidence. Clear and convincing evidence means evidence that it is highly probable that a fact is true. Clear and convincing evidence involves a higher degree of persuasion than is necessary to

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meet the preponderance of the evidence standard. But it does not require proof beyond a reasonable doubt.

In determining whether either party has met its burden, you may, unless otherwise instructed, consider all the evidence, regardless of who may have produced it.

#### 1.3 Evidence Defined

You must make your decision based only on the evidence that you saw and heard here in court. Do not let rumors, suspicions, or anything else that you may have seen or heard outside of court influence your decision in any way. The evidence in this case includes only what the witnesses said while they were testifying under oath, including deposition transcript testimony that has been played by video or read to you, the exhibits that I allowed into evidence, matters I have instructed you to take judicial notice of, and the stipulations to which the lawyers agreed.

Certain models, reproductions, charts, summaries, and graphics have been used to illustrate certain evidence and testimony from witnesses. Unless I have specifically admitted them into evidence, these models, reproductions, charts, summaries, and graphics are not themselves evidence, even if they refer to, identify, or summarize evidence, and you will not have these demonstratives in the jury room.

Nothing else is evidence. The lawyers' statements and arguments are not evidence. The arguments of the lawyers are offered solely as an aid to help you in your determination of the facts. Their questions and objections are not evidence. My legal rulings are not evidence. You should not be influenced by a lawyer's objection or by my ruling on that objection. None of my comments or questions are evidence.

During the trial, I may have not let you hear the answers to some of the questions that the lawyers asked. I also may have ruled that you could not see some of the exhibits that the lawyers wanted you to see. And, sometimes I may have ordered you to disregard things that you saw or heard, or that I struck from the record. You must completely ignore all of these things. Do not speculate about what a witness might have said or what an exhibit might have shown. These things are not evidence, and you are bound by your oath not to let them influence your decision in any way. Make your decision based only on the evidence, as I have defined it here, and nothing else.

#### 1.4 Direct and Circumstantial Evidence

During the preliminary instructions, the Court told you about "direct evidence" and "circumstantial evidence." I will now remind you what each means.

Direct evidence is simply evidence like the testimony of an eyewitness which directly proves a fact. If a witness testified that he saw it raining outside, that would be direct evidence that it was raining.

Circumstantial evidence is simply a chain of circumstances that indirectly proves a fact. If someone walked into the courtroom wearing a raincoat covered with drops of water and carrying a wet umbrella, that would be circumstantial evidence from which you could conclude that it was raining.

It is your job to decide how much weight to give the direct and circumstantial evidence. The law makes no distinction between the weight that you should give to either one, nor does it say that one is any better evidence than the other. You should consider all the evidence, both direct and circumstantial, and give it whatever weight you believe it deserves.

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# 1.5 Consideration of Evidence

You should use your common sense in weighing the evidence. Consider it in light of your everyday experience with people and events, and give it whatever weight you believe it deserves. If your experience tells you that certain evidence reasonably leads to a conclusion, you are free to reach that conclusion.

#### 1.6 Statements of Counsel

A further word about statements of counsel and arguments of counsel. The attorneys' statements and arguments are not evidence. Instead, their statements and arguments are intended to help you review the evidence presented.

If you remember the evidence differently from the way it was described by the attorneys, you should rely on your own recollection.

### 1.7 Credibility of Witnesses; Weighing Conflicting Testimony

You are the sole judges of each witness's credibility. You may believe everything a witness says, or part of it, or none of it. You should consider each witness's means of knowledge; strength of memory; opportunity to observe; how reasonable or unreasonable the testimony is; whether it is consistent or inconsistent; whether it has been contradicted; the witness's biases, prejudices, or interests; the witness's manner or demeanor on the witness stand; and all circumstances that, according to the evidence, could affect the credibility of the testimony.

In determining the weight to give to the testimony of a witness, you should ask yourself whether there is evidence tending to prove that the witness testified falsely about some important fact or whether there was evidence that at some other time the witness said or did something, or failed to say or do something, that was different from the testimony he or she gave at the trial in person or by deposition testimony played by video or read to you. You have the right to distrust such witness's testimony and you may reject all or some of the testimony of that witness or give it such credibility as you may think it deserves.

#### 1.8 Expert Witnesses

Expert testimony is testimony from a person who has a special skill or knowledge in some science, profession, or business. This skill or knowledge is not common to the average person but has been acquired by the expert through special study or experience.

In weighing expert testimony, you may consider the expert's qualifications, the reasons for the expert's opinions, and the reliability of the information supporting the expert's opinions, as well as the factors I have previously mentioned for weighing testimony of any other witness. Expert testimony should receive whatever weight and credit you think appropriate, given all the other evidence in the case. You are free to accept or reject the testimony of experts, just as with any other witness.

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### 1.9 Deposition Testimony

During the trial, certain testimony was presented to you by the playing of video excerpts from a deposition. The deposition testimony may have been edited or cut to exclude irrelevant testimony as the parties have only a limited amount of time to present you with evidence. You should not attribute any significance to the fact that the deposition videos may appear to have been edited.

Deposition testimony is out-of-court testimony given under oath and is entitled to the same consideration you would give it had the witnesses personally appeared in court.

#### 1.10 Demonstrative Exhibits

During the course of the trial, you have seen many exhibits. Many of these exhibits were admitted as evidence. You will have these admitted exhibits in the jury room for your deliberations.

The remainder of the exhibits (including charts, models, reproductions, PowerPoint presentations, and animations) were offered to help illustrate the testimony of the various witnesses. These illustrative exhibits, called "demonstrative exhibits," have not been admitted, are not evidence, and should not be considered as evidence. Rather, it is the underlying testimony of the witness that you heard when you saw the demonstrative exhibits that is the evidence in this case.

#### 1.11 Use of Notes

You may have taken notes during trial to assist your memory. As I instructed you at the beginning of the case, you should use caution in consulting your notes. There is a general tendency to attach undue importance to matters which one has written down. In addition, some testimony which is considered unimportant at the time presented, and thus not written down, may take on greater importance later in the trial in light of all the evidence presented. Therefore, your notes are only a tool to aid your own individual memory, and you should not compare notes with other jurors in determining the content of any testimony or in evaluating the importance of any evidence. Your notes are not evidence and are by no means a complete outline of the proceedings or a list of the highlights of the trial.

Above all, your memory should be the greatest asset when it comes time to deliberate and render a decision in this case.

#### 2. THE PARTIES AND THEIR CONTENTIONS

I will now summarize the issues that you must decide and for which I will provide instructions to guide your deliberations. You must decide the following main issues:

- 1. Whether TrackThings has proven by a preponderance of the evidence that Netgear infringe one or more of the Asserted Claims.
- 2. Whether Netgear has proven by clear and convincing evidence that one or more of the Asserted Claims is invalid.
- 3. If you decide that one or more of the Asserted Claims has been infringed by Netgear and is not invalid, you will then need to decide the amount of money damages TrackThings has proven by a preponderance of the evidence are to be awarded.
- 4. If you decide that one or more of the Asserted Claims has been infringed by Netgear and is not invalid, you will also need to decide whether TrackThings has proven by a preponderance of the evidence that Netgear's infringement was willful.

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### 2.1 Claim Construction—Generally

Before you decide infringement and invalidity, you will have to understand the patent claims. The patent claims are numbered sentences at the end of the patent.

The claims are intended to define, in words, the boundaries of the inventor's rights. Only the claims of the patent can be infringed. Neither the written description, nor the drawings of a patent can be infringed. Each of the claims must be considered individually. You must use the same claim meaning for both your decision on infringement and your decision on invalidity.

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## 2.1.1 Claim Constructions for the Case

It is my job as judge to provide to you the meaning of any claim language that must be interpreted. You must accept the meanings I give you and use them when you decide whether any claim has been infringed and whether any claim is invalid. Those meanings have been provided to you in a chart in your binders.

#### 3. INFRINGEMENT

I will now instruct you as to the law you must follow when deciding whether TrackThings has proven that Netgear infringed any of the Asserted Claims.

Patent law gives the owner of a valid patent the right to exclude others from importing, making, using, offering to sell, or selling the claimed invention within the United States during the term of the patent. Any person or business entity that has engaged in any of those acts without the patent owner's permission infringes the patent. Here, TrackThings alleges that Netgear's Orbi and Nighthawk Mesh Products ("the Accused Products") infringe the Asserted Claims.

Having one's own patent is not a defense to infringing another's patent. Accordingly, whether Netgear has patents and whether any of these patents cover the Accused Products should not be considered in your determination of whether the Accused Products infringe TrackThings' patent.

In this case, TrackThings has accused Netgear of actively inducing its customers and end users of directly infringing the Asserted Claims. I will now explain what it means to induce infringement and what direct infringement means as well.

### 3.1 Direct Infringement—Infringement

To determine infringement, you must compare the accused products or method with each patent claim TrackThings asserts is infringed.

You must determine infringement separately for each patent claim that TrackThings asserts is infringed.

A patent claim is infringed only if the accused products or method includes each and every element or method step recited in that patent claim. The same element or method step of the accused product or method may satisfy more than one element of a patent claim. If the accused product or method does not contain one or more elements or method steps recited in a claim, then the accused product or method does not infringe.

### 3.2 Infringement of Dependent Claims

There are two different types of claims in the patent. One type is called an independent claim. The other is called a dependent claim.

An independent claim does not refer to any other claim of the patent. For example, Claim 1 of the '442 Patent is an independent claim. An independent claim must be read separately from the other claims to determine the scope of the claim.

A dependent claim refers to at least one other claim in the patent. For example, Claim 8 of the '442 Patent is a dependent claim that refers to Claim 1 of the '442 Patent. A dependent claim includes all elements recited in the dependent claim, as well as all elements of the independent claim to which it refers.

To establish literal infringement of a dependent claim, TrackThings must show that it is more likely than not that the accused product or method includes each and every element of the independent claim and dependent claim.

If you find that an independent claim from which a dependent claim depends is not literally infringed, then you must find that the dependent claim is also not literally infringed.

# 3.3 Infringement of "Comprising of" Claims

The preambles to the Asserted Claims use the word "comprising." The word "comprising" means "including the following but not excluding others."

If you find that the accused product or method includes all of the elements in one of the Asserted Claims, even if the accused product or method includes additional components or method steps, you must find that the accused product or method literally infringes that claim.

#### 4 Doctrine of Equivalents

If you decide that Netgear does not literally infringe an asserted patent claim, you must then decide whether Netgear infringes the asserted claim under what is called the "doctrine of equivalents."

Under the doctrine of equivalents, an accused product infringes an asserted patent claim if it includes parts that are identical or equivalent to the requirements of the claim. In making your decision under the doctrine of equivalents, you must look at each individual requirement of the asserted patent claim and decide whether the accused product has either an identical or equivalent part to that individual claim requirement.

A part of an accused product is equivalent to a requirement of an Asserted Claim if a person of ordinary skill in the field would think that the differences between the part and the requirement were not substantial as of the time of the alleged infringement.

Changes in technique or improvements made possible by technology developed after the patent application is filed may still be equivalent for the purposes of the doctrine of equivalents if it still meets the other requirements of the doctrine of equivalents set forth in this instruction.

One way to decide whether any difference between a requirement of an Asserted Claim and a part of the accused product is not substantial is to consider whether, as of the time of the alleged infringement, the part of the product performed substantially the same function, in substantially the same way, to achieve substantially the same result as the requirement in the patent claim.

In order for the structure to be considered interchangeable, the equivalent must have been known at the time of the alleged infringement to a person having ordinary skill in the field of technology of the patent. However, the equivalent itself need not be disclosed in the patent in order for such equivalent to infringe upon the patent. You may find infringement under the doctrine of DOC ID - 48188249.5

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equivalents even if a combination of components of the Accused Products or steps of the accused method are equivalent to a single element or step of the Asserted Claim.

#### 3.5 Indirect Infringement - Active Inducement

TrackThings also alleges that Netgear is liable for infringement by actively inducing its customers (including related entities, unrelated entities, or end-users) to directly infringe the Asserted Patent literally or under the doctrine of equivalents. As with direct infringement, you must determine whether there has been active inducement on a claim-by-claim basis.

Induced infringement requires knowledge by the accused infringer that the induced acts constitute patent infringement or at least willful blindness to the likelihood of infringement. Therefore, a party is liable for active inducement of a claim only if TrackThings proves by a preponderance of the evidence:

- 1. that the acts are actually carried out by Netgear's customers directly infringe that claim;
- 2. that Netgear took action during the time the Asserted Patent was in force that was intended to cause and led to the infringing acts by its customers; and
- 3. that Netgear was aware of the Asserted Patent and knew that the acts, if taken, would constitute infringement of the Asserted Patent, or that Netgear believed there was a high probability that the acts by its customers infringed the Asserted Patent and took deliberate steps to avoid learning of that infringement (in other words, willfully blinded itself to the infringing nature of the direct infringer's acts).

If you find that Netgear was aware of the patent, but believed that the acts it encouraged did not infringe that patent, Netgear cannot be liable for inducement.

In order to establish active inducement of infringement, it is not sufficient that Netgear's customers themselves directly infringe the claim. Nor is it sufficient that Netgear was aware of the act(s) by its customers that allegedly constitute the direct infringement. Rather, in order to find active inducement of infringement, you must find either that Netgear specifically intended its customers to infringe the Asserted Patent or that Netgear believed there was a high probability that its customers would infringe the Asserted Patent, but deliberately avoided learning the infringing nature of its customers' acts. The mere fact, if true, that Netgear knew or should have known that

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there was a substantial risk that Netgear's customers' acts would infringe the Asserted Patent would not be sufficient to support a finding of active inducement of infringement.

#### 3.6 Willfulness

If you decide that Netgear infringed any of the Asserted Claims, you must go on and address the additional issue of whether or not the infringement was willful. Willfulness requires you to determine whether TrackThings has proven by a preponderance of the evidence that Netgear knew of the patent and that the infringement by Netgear was deliberate or intentional. You may not determine that the infringement was willful just because Netgear was aware of the patent and infringed it. Instead, you must also find that Netgear deliberately or intentionally infringed the Asserted Claims of that Patent. To determine whether Netgear acted willfully, consider all facts and assess Netgear's knowledge at the time of the challenged conduct.

Facts that may be considered include, but are not limited, to:

- 1. Whether or not Netgear acted consistently with the standards of behavior for its industry;
- 2. Whether or not Netgear intentionally copied a product of TrackThings that is covered by the Asserted Patent;
- 3. Whether or not Netgear reasonably believed that it did not infringe, or that the Asserted Patent was invalid;
- 4. Whether or not Netgear made a good-faith effort to avoid infringing the Asserted Patent, for example, whether Netgear attempted to design around the Asserted Patent; and
- 5. Whether or not Netgear tried to cover up its infringement.

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# 4. INVALIDITY

Netgear contends that the Asserted Claims of the Asserted Patent are invalid. Netgear must prove invalidity by clear and convincing evidence.

Claims of an issued patent may be found to be invalid. Thus, you must determine whether each of TrackThings' claims are invalid.

#### 4.1 Prior Art

Netgear alleges the following are prior art:

#### • [DEFENDANT TO FILL IN]

You must determine whether each of the above is prior art that can be considered in determining whether the Asserted Claims are anticipated or obvious. There are different types of prior art, and I will instruct you on the relevant types that you need to consider. Netgear contends that each of the above is prior art because it was [DEFENDANT PLEASE FILL IN ALLEGED PRIOR ART THEORIES].

An invention is known when the information about it was reasonably accessible to the public on that date. A description is a "printed publication" only if it was publicly accessible.

An invention was publicly used when it was either accessible to the public or commercially exploited. An invention was sold or offered for sale when it was offered commercially and what was offered was ready to be patented, i.e., it was reduced to practice or it had been described such that a person having ordinary skill in the field of the technology could have made and used the claimed invention, even if it was not yet reduced to practice or publicly disclosed.

Netgear must prove by clear and convincing evidence that each of the above is prior art.

# 4.2 Invalidity – Prior Art – Conception/Reduction to Practice

In this case, you must determine the date of invention for the Asserted Claims of the '442 Patent.

TrackThings contends that the date of invention is January 2, 2006 or at a minimum by May 1, 2007, the filing date of U.S. Patent Application No. 11/681,158, which issued as the '017 Patent. The '442 Patent is a continuation of the '017 Patent and claims priority to it. Netgear contends that the date of invention is [DEFENDANT FILL IN].

The date of invention is the earlier of either (1) when the claimed invention was conceived, provided the inventor was diligent in reducing the invention to practice or (2) when the claimed invention was reduced to practice.

"Conception" is the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention, even if the inventor did not know at the time that the invention would work. Conception is complete when the idea is so clearly defined in the inventor's mind that, if the idea were communicated to a person having ordinary skill in the field of the technology, he or she would be able to reduce the invention to practice without undue research or experimentation. This requirement does not mean that the inventor has to have a prototype built, or actually explained the invention to another person. Conception may be established when the invention is shown in its complete form by drawings, disclosure to another person, or other forms of evidence presented at trial.

"Diligence" means working continuously, though not necessarily every day. Interruptions necessitated by the everyday problems and obligations of the inventor or others working with him or her do not prevent a finding of reasonable diligence.

A claimed invention is "reduced to practice" when it has been constructed, used, or tested sufficiently to show that it will work for its intended purpose or when the inventor files a patent DOC ID - 48188249.5

application that fully describes the invention. When an inventor files a patent application it is said to have "constructively" reduced the invention to practice. An invention may be "constructively" reduced to practice even if the inventor has not made or tested a prototype of the invention if it has been fully described in a filed patent application.

On the issues of conception, diligence, and reduction to practice, there must be some evidence beyond the inventor's own testimony that confirms the inventor's testimony. This additional evidence is called corroborating evidence and can be in the form of documents or testimony from other witnesses. It may also be circumstantial. However, there need not be corroborating evidence for every detail of the inventor's testimony or with respect to every claim limitation. Instead, the question is whether the evidence as a whole makes the inventor's story credible.

TrackThings contends that the invention date for the '442 Patent is January 2, 2006 or at a minimum by May 1, 2007 and has put forth sufficient evidence supporting its contention. Thus, TrackThings need not convince you that its invention date is correct. Instead, for categories of prior art that must come before the invention date, Netgear must prove by clear and convincing evidence that its prior art predates the invention or must prove by clear and convincing evidence that TrackThings is not entitled to an invention date of January 2, 2006 or May 1, 2007.

# 4.3 Anticipation

In order for someone to be entitled to a patent, the invention must actually be "new." Netgear contends that Asserted Claims are invalid because the claimed invention is anticipated. Netgear must convince you of this by clear and convincing evidence, i.e., that the evidence highly probably demonstrates that the claims are invalid.

Specifically, Netgear contends **DEFENDANT FILL IN**].

Anticipation must be determined on a claim-by-claim basis. Netgear must prove by clear and convincing evidence that all of the requirements of a claim are present in a single piece of prior art. To anticipate the invention, the prior art does not have to use the same words as the claim, but all of the requirements of the claim must have been disclosed and arranged as in the claim.

The claim requirements must be disclosed expressly such that a person having ordinary skill in the art in the technology of the invention, looking at that one reference, could make and use the claimed invention.

Where Netgear is relying on prior art that was not considered by the PTO during examination, you may consider whether that prior art is significantly different and more relevant than the prior art that the PTO did consider. If you decide it is different and more relevant, you may weigh that prior art more heavily when considering whether the challenger has carried its clear-and-convincing burden of proving invalidity.

The Patent Office is presumed to have considered prior art disclosed to it. Where Netgear is relying on prior art that was considered by the PTO during examination, you may weigh that prior art less heavily when considering whether the Netgear has carried its clear-and-convincing burden of proving invalidity.

If a dependent claim is anticipated by the prior art, then the claims from which it depends are necessarily anticipated as well.

#### 4.4 Obviousness

Even though an invention may not have been identically disclosed or described before it was made by an inventor, in order to be patentable, the invention must also not have been obvious to a person of ordinary skill in the field of technology of the patent before the effective filing date of the Asserted Patent.

Netgear may establish that a patent claim is invalid by proving, by clear and convincing evidence that the claimed invention would have been obvious to persons having ordinary skill in the art as of the patent's invention dates.

In determining whether a claimed invention is obvious, you must consider:

- 1. the level of ordinary skill in the field of the invention that someone would have had at as of these dates,
- 2. the scope and content of the prior art,
- 3. any differences between the prior art and the claimed invention, and,
- 4. if present, so-called objective evidence or secondary considerations.

I will now provide you some additional instructions related to each of those requirements.

In considering whether the claimed invention was obvious, you must first determine the scope and content of the prior art.

The scope and content of prior art for deciding whether the invention was obvious includes at least prior art in the same field as the claimed invention. It also includes prior art from different fields that a person of ordinary skill in the art would have considered when trying to solve the problem that is addressed by the invention.

Keep in mind that the existence of each and every element of the claimed invention in the prior art does not necessarily prove obviousness. Most, if not all, inventions rely on building blocks of prior art. In considering whether a claimed invention is obvious, you should consider whether,

at the time of the patent's inventions, there was a reason that would have prompted a person having ordinary skill in the field of the invention to combine the known elements in the prior art in a way the claimed invention does, taking into account such factors as:

- 1. whether the claimed invention was merely the predictable result of using prior art elements according to their known function(s);
- 2. whether the claimed invention provides an obvious solution to a known problem in the relevant field;
- 3. whether the prior art teaches or suggests the desirability of combining elements claimed in the invention;
- 4. whether the prior art teaches away from combining elements in the claimed invention; and
- 5. whether it would have been obvious to try the combinations of elements, such as when there is a design incentive or market pressure to solve a problem and there are a finite number of identified, predictable solutions. To find it rendered the claimed invention obvious, you must find that the prior art provided a reasonable expectation of success.

In determining whether the claimed invention was obvious, consider each claim separately, but understand that if a dependent claim is obvious, then the claims from which it depends are necessarily obvious as well. Do not use hindsight; consider only what was known at the time of the patent's filing date.

In making these assessments, you must also take into account any objective evidence, sometimes called secondary considerations, that may have existed at the time of the invention and afterwards that shed light on non-obviousness. These include:

- 1. Whether the claimed invention was commercially successful as a result of the merits of the claimed invention (rather than the result of design needs or market-pressure advertising or similar activities);
- 2. Whether the claimed invention satisfied a long-felt need;
- 3. Whether others had tried and failed to make the claimed invention;
- 4. Whether others invented the claimed invention at roughly the same time;

- 5. Whether others copied the claimed invention;
- 6. Whether the claimed invention achieved unexpected results;
- 7. Whether others in the field praised the claimed invention;
- 8. Whether persons having ordinary skill in the art of the invention expressed surprise or disbelief regarding the claimed invention; and
- 9. Whether the inventor proceeded contrary to accepted wisdom in the field.

These objective indicia can show that the invention is not obvious. While these objective indicia must be taken into account, you must consider all of the evidence related to obviousness before you reach a decision.

# 4.5 Written Description Requirement

The patent law contains certain requirements for the part of the patent called the specification. The written description requirement is designed to ensure that the inventor was in possession of the full scope of claimed invention as of the patent's effective filing date.

Netgear contends that the Asserted Claims of the '442 Patent are invalid because the specification of the Asserted Patent do not contain an adequate written description of the invention.

To succeed, Netgear must show by clear and convincing evidence that a person having ordinary skill in the field reading the Asserted Patent's specification as of its effective filing date (March 1, 2007) would not have recognized that they describe the full scope of the inventions as they are finally claimed in the Asserted Claims of the Asserted Patent. In other words, the specification must describe the claimed invention in sufficient detail that one skilled in the art can clearly recognize that the inventor invented the claimed invention. If a patent claim lacks adequate written description, it is invalid.

In deciding whether the patent satisfies this written description requirement, you must consider the description from the viewpoint of a person having ordinary skill in the field of technology of the patent as of the effective filing date. The specification must describe the full scope of the claimed invention, including each element thereof, either expressly or inherently. A claimed element is disclosed inherently if a person having ordinary skill in the field as of the effective filing date would have understood that the element is necessarily present in what the specification discloses. It is not sufficient that the specification discloses only enough to make the claimed invention obvious to the person having ordinary skill.

The written description does not have to be in the exact words of the claim. The requirement may be satisfied by the words, structures, figures, diagrams, formulas, etc., contained in the patent specification. Adequate written description does not require either examples or an DOC ID - 48188249.5

actual reduction to practice of the claimed invention(s). However, a mere wish or plan for obtaining the claimed invention(s) is not adequate written description. Rather, the level of disclosure required depends on a variety of factors, such as the existing knowledge in the particular field, the extent and content of the prior art, the maturity of the science or technology, and other considerations appropriate to the subject matter.

The written description inquiry focuses on whether the Asserted Patent sufficiently describe the asserted claims, not the accused products. Further, the written description requirement does not require a patentee to predict every possible variation, improvement or commercial embodiment of his invention. A patent need not teach, and preferably omits, what is well-known in the art.

Claims that are directed to an invention that is distinct from that disclosed in the specification do not satisfy the written description requirement. Accordingly, claims may be no broader than the supporting disclosure such that the inventor must possess the full scope of the claimed subject matter to satisfy the written description requirement.

# 4.6 Level of Ordinary Skill

The question of invalidity of a patent claim is determined from the perspective of a person of ordinary skill in the art in the field of the asserted invention as of the priority date of each asserted patent. A person of ordinary skill in the art is a hypothetical person who is presumed to have known all of the relevant prior art at the time of the claimed convention. In deciding the level of ordinary skill, you should consider all the evidence introduced at trial, including:

- 1. the levels of education and experience of the inventor and other persons actively working in the field;
- 2. the types of problems encountered in the field;
- 3. prior art solutions to those problems;
- 4. the rapidity with which innovations are made; and
- 5. the sophistication of the technology.

The parties agree that a person of ordinary skill would have had at the time of the patent's effective filing date would have had a bachelor's degree in Computer Science, Computer Engineering, Electrical Engineering, or a related field in computing technology, and at least two years' experience in computer networking and wired and wireless communication networks, or equivalent education, research experience, and knowledge. However, with more experience, less education may be needed, and vice versa.

#### 5. DAMAGES – INTRODUCTION

If you find that Netgear infringed any valid claim of the Asserted Patent, you must then consider what amount of damages to award to TrackThings. I will now instruct you about the measure of damages. By instructing you on damages, I am not suggesting which party should win this case, on any issue. I instruct you on damages only in the event that you first find that TrackThings has proven infringement of a claim that is valid. If you find that both Netgear has not infringed any valid claim of the patent, then TrackThings is not entitled to any damages.

The damages you award must be adequate to compensate TrackThings for the infringement. Damages are not meant to punish an infringer.

TrackThings has the burden to establish the amount of its damages by a preponderance of the evidence. In other words, you should award only those damages that TrackThings establishes that it more likely than not has suffered. While TrackThings is not required to prove the amount of its damages with mathematical precision, it must prove them with reasonable certainty. You may not award damages that are speculative, damages that are only possible, or damages that are based on guesswork.

There are different types of damages that TrackThings may be entitled to recover. In this case, TrackThings seeks a reasonable royalty. A reasonable royalty is defined as the money amount TrackThings and Netgear would have agreed upon as a fee for use of the invention at the time just prior to when infringement began. You must be careful to ensure that award is no more and no less than the value of the patented invention.

I will give more detailed instructions regarding damages shortly. Note, however, that if you award damages, TrackThings is entitled to recover no less than a reasonable royalty for each infringing sale.

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# 5.1 Reasonable Royalty – Entitlement

If you find that a patent claim is infringed and not invalid, TrackThings is entitled to at least a reasonable royalty to compensate it for that infringement.

# 5.2 Reasonable Royalty – Definition

A royalty is a payment made to a patent holder in exchange for the right to make, use, or sell the claimed invention. A reasonable royalty is the amount of royalty payment that a patent holder and the alleged infringer would have agreed to in a hypothetical negotiation taking place at a time prior to when the infringement first began.

In considering this hypothetical negotiation, you should focus on what the expectations of the patent holder and the alleged infringer would have been had they entered into an agreement at that time, and had they acted reasonably in their negotiations. In determining this, you must assume that both parties believed the patent was valid and infringed and that both parties were willing to enter into an agreement. Your role is to determine what the result of that negotiation would have been.

The reasonable royalty you determine must be a royalty that would have resulted from the hypothetical negotiation, and not simply a royalty either party would have preferred. Evidence of things that happened after the infringement first began can be considered in evaluating the reasonable royalty only to the extent that the evidence aids in assessing what royalty would have resulted from a hypothetical negotiation just prior to the first infringement, which would have occurred in November 2016 for the '442 Patent.

## 5.3 Damages - Lump Sum vs. Running Royalty

A reasonable royalty can be paid either in the form of a one-time lump sum payment or as a "running royalty." Either method is designed to compensate the patent holder based on the infringer's use of the patented technology. It is up to you, based on the evidence, to decide what type of royalty, if any, is appropriate in this case.

Reasonable royalty awards can take the form of a lump sum payment. A lump sum payment is equal to an amount that the alleged infringer would have paid at the time of a hypothetical negotiation for a license covering all sales of the licensed product, both past and future. When a lump sum is paid, the infringer pays a single price for a license covering both past and future infringing sales.

Reasonable royalty awards may also take the form of a running royalty based on the revenue from or the volume of sales of licensed products. A running royalty can be calculated, for example, by multiplying a royalty base by a royalty rate, or by multiplying the number of infringing products or product units sold by a royalty amount per unit.

# **5.4** Damages – Apportionment

Any amount of damages must be based on the value attributable to the patented invention, as distinct from the unpatented features of the accused product or other factors such as marketing, or advertising. A royalty compensating TrackThings for damages must reflect only the value attributable to the infringing feature of the accused product, and no more. The process of separating the value of the allegedly infringing features of the accused product or process from the value of all other features not accused is called apportionment. When the accused infringing products have both patented and unpatented features, your award must be apportioned so that it is based only on the value of the patented feature, and no more.

The process of separating the value of the allegedly infringing features from the value of all other features is called apportionment. When the technology accused of infringement has both patented and unpatented features, your award must be apportioned so that it is based only on the value of the patented features.

Apportionment can be addressed in a variety of ways, including by careful selection of the royalty base to reflect the value added by the patented feature or by adjustment of the royalty rate so as to discount the value of a product's non-patented features; or by a combination thereof. In determining the appropriate royalty base and the appropriate royalty rate, the ultimate combination of both the royalty rate and the royalty base must reflect the value attributable to the patented technology. In other words, the royalty base must be closely tied to the invention. It is not sufficient to use a royalty base that is too high and then adjust the damages downward by applying a lower royalty rate. Similarly, it is not appropriate to select a royalty base that is too low and then adjust it upward by applying a higher royalty rate. Rather, you must determine an appropriate royalty rate and an appropriate royalty base that reflect the value attributable to the patented invention alone.

## 5.5 Reasonable Royalty - Relevant Factors

In deciding what is a reasonable royalty that would have resulted from the hypothetical negotiation, you may consider the following factors:

- 1. The royalties received by the patentee for the licensing of the Asserted Patent, proving or tending to prove an established royalty.
- 2. The rates paid by the licensee for the use of other patents comparable to the Asserted Patent.
- 3. The nature and scope of the license, as exclusive or nonexclusive, or as restricted or nonrestricted in terms of territory or with respect to whom the manufactured product may be sold.
- 4. The licensor's established policy regarding either licensing or not licensing the Asserted Patent.
- 5. The commercial relationship between the licensor and licensee, such as whether they are competitors in the same territory in the same line of business, or whether they are inventor and promoter.
- 6. The effect of selling the patented specialty in promoting sales of other products of the licensee, the existing value of the invention to the licensor as a generator of sales of his nonpatented items, and the extent of such derivative or convoyed sales.
- 7. The duration of the patent and the term of the license.
- 8. The established profitability of the product made under the patent and its commercial success.
- 9. The utility and advantages of the patented property over the old modes or devices.
- 10. The nature of the patented invention, the character of the commercial embodiment of it as owned and produced by the licensor, and the benefits to those who have used the invention.
- 11. The extent to which the infringer has made use of the invention and any evidence of the value of that use.
- 12. The portion of the profit or of the selling price that may be customary in the particular business or in comparable business to allow for the use of the invention or analogous inventions.
- 13. The portion of the realizable profits that should be credited to the invention as distinguished from nonpatented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.

- 14. The opinion and testimony of qualified experts.
- 15. The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent license who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention-would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.

No one factor is dispositive and you can and should consider the evidence that has been presented to you in this case on each of these factors. You may also consider any other factors which in your mind would have increased or decreased the royalty the alleged infringer would have been willing to pay and the patent holder would have been willing to accept, acting as normally prudent business people.

## **5.6** Damages - Comparable Agreements

The existence of any comparable patent royalty agreement or other transactions may inform your decision as to the proper amount and form of the reasonable royalty award, similar to the way in which the value of a house is determined relative to comparable houses sold in the same neighborhood.

Whether a particular patent agreement or other transaction is comparable to the license under the hypothetical license scenario depends on many factors, such as whether they involve comparable technologies, comparable economic circumstances, comparable structure, and comparable scope. If there are differences between a license agreement and the hypothetical license, you must take those into account when you make your reasonable royalty determination.

While the parties to the hypothetical negotiation assume a patent is valid and infringed, an agreement may be comparable even if there's been no determination or assumption by the parties to the agreement that the patent is valid and infringed.

The question is whether the agreement is sufficiently comparable that it provides a reasonable indication of how the parties to the hypothetical negotiation would have negotiated a license to the Asserted Patent. However, if you choose to rely upon evidence from any license agreements, you must account for any differences between those licenses and the hypothetically negotiated license between the patent owner and the accused infringer in terms of the technologies and economic circumstances of the contracting parties when you make your reasonable royalty determination.

The hypothetical license is deemed to be a voluntary agreement. When determining if a license agreement is comparable to the hypothetical license, you may consider whether the license agreement is between parties to a lawsuit and whether the license agreement was a settlement influenced by a desire to avoid further litigation.

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# 5.7 Date Damage Begin

TrackThings and Netgear agree that the date for the start of any damages calculation is June 23, 2021.

#### 6. WILLFUL INFRINGEMENT

If you find that it is more likely than not that Netgear infringed a valid claim of the Asserted Patent, then you must also determine whether or not Netgear's infringement was willful.

To show that Netgear's infringement was willful, TrackThings must prove by a preponderance of the evidence that Netgear knew of the Asserted Patent and intentionally infringed at least one of the Asserted Claims. You may consider whether Netgear's behavior was deliberate or intentional. However, you may not find that Netgear's infringement was willful merely because Netgear knew about the patent, without deliberate or intentional infringement. In determining whether TrackThings has proven that Netgear's infringement was willful, you must consider all of the circumstances and assess Netgear's knowledge at the time the challenged conduct occurred.

If you determine that any infringement was willful, you may not allow that decision to affect the amount of any damages award you give for infringement.

## 7. DELIBERATION AND VERDICT

Now let me finish up by explaining some things about your deliberation in the jury room, and your possible verdicts.

Once you start deliberating, do not talk to the jury officer, or to me, or to anyone else except each other about the case. If you have any questions or messages, you must write them down on a piece of paper, sign them, and then give them to the jury officer. The officer will give them to me, and I will respond as soon as I can. I may have to talk to the lawyers about what you have asked, so it may take some time to get back to you. Any questions or messages normally should be sent to me through your foreperson, who by custom of this Court is Juror No. 1.

One more thing about messages. Do not ever write down on your message to me or tell the jury officer how you stand on your votes. For example, do not write down or say that you are split 4-4, or 6-2, or whatever your vote happens to be. That should stay secret until you are finished.

#### 7.1 Unanimous Verdict

Your verdict must represent the considered judgment of each juror. In order for you as a jury to return a verdict, it is necessary that each juror agree to the verdict. Your verdict must be unanimous.

It is your duty, as jurors, to consult with one another and to deliberate with a view towards reaching an agreement, if you can do so without violence to your individual judgment. Each of you must decide the case for yourself, but do so only after an impartial consideration of the evidence with your fellow jurors. In the course of your deliberations, do not hesitate to reexamine your own views and change your opinion, if convinced it is erroneous. But do not surrender your honest conviction as to the weight or effect of evidence solely because of the opinion of your fellow jurors, or for the purpose of returning a verdict. Remember at all times that you are not partisans. You are judges of the facts. Your sole interest is to seek the truth from the evidence in the case.

A verdict form has been prepared for you. You will take this form to the jury room and when you have reached unanimous agreement as to your verdict, you will have your foreperson fill in, date and sign the form. You will then return to the courtroom and my deputy will read aloud your verdict. Answer each question in the verdict form based on the facts as you find them to be, following the instructions that the Court has given you on the law. Do not decide who you think should win this case and then answer the questions accordingly.

It is proper to add the caution that nothing said in these instructions, and nothing in the verdict form, is meant to suggest or convey in any way or manner any intimation as to what verdict I think you should find. What the verdict shall be is your sole and exclusive duty and responsibility.

# 7.2 Duty to Deliberate

Now that all the evidence is in and the arguments are completed, you are free to talk about the case in the jury room. In fact, it is your duty to talk with each other about the evidence, and to make every reasonable effort you can to reach unanimous agreement. Talk with each other, listen carefully and respectfully to each other's views, and keep an open mind as you listen to what your fellow jurors have to say. Try your best to work out your differences. Do not hesitate to change your mind if you are convinced that other jurors are right and that your original position was wrong. But do not ever change your mind just because other jurors see things differently, or just to get the case over with. In the end, your vote must be exactly that, your own vote. It is important for you to reach unanimous agreement, but only if you can do so honestly and in good conscience.

No one will be allowed to hear your discussions in the jury room, and no record will be made of what you say. So you should all feel free to speak your minds. Listen carefully to what the other jurors have to say, and then decide for yourself.

#### 7.3 Social Media

During your deliberations, just as during trial, you must not communicate with or provide any information to anyone by any means about this case. You may not use any electronic device or media, such as the telephone, a cell phone, smartphone, iPhone, iPad, blackberry, tablet or computer, the Internet, any Internet service, any text or instant messaging service, any Internet chat room, blog or website such as Facebook, LinkedIn, YouTube, Instagram, WeChat, WhatsApp, SnapChat, X (formerly known as Twitter), or TikTok to communicate to anyone any information about this case or to conduct any research about this case until I accept your verdict. In other words, you cannot talk to anyone on the phone, correspond with anyone, or electronically communicate with anyone about this case. You can only discuss the case in the jury room with your fellow jurors during deliberations.

Of course, you may examine the various devices entered into evidence in this case—just as you may examine other evidence from this case. But you should not use those devices to perform Internet research about this case or to communicate with anyone outside the jury room.

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# 7.4 Court Has No Opinion

Let me finish by repeating something I said to you earlier. Nothing that I have said or done during this trial was meant to influence your decision in any way. You must decide the case yourselves based on the evidence presented.

# EXHIBIT 5

US010292159B2

# (12) United States Patent

#### Amini et al.

# (10) Patent No.: US 10,292,159 B2

#### (45) **Date of Patent:** May 14, 2019

# (54) AUTOMATED MESH POINT SURVEY AND GUIDED INSTALLATION FOR A WIRELESS MESH NETWORK

(71) Applicant: NETGEAR, INC., San Jose, CA (US)

(72) Inventors: **Peiman Amini**, Mountain View, CA
(US); **Joseph Amalan Arul Emmanuel**, Cupertino, CA (US)

(73) Assignee: **NETGEAR, INC.**, San Jose, CA (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 64 days.

(21) Appl. No.: 15/287,678

(22) Filed: Oct. 6, 2016

(65) Prior Publication Data

US 2017/0135145 A1 May 11, 2017

#### Related U.S. Application Data

- (60) Provisional application No. 62/336,503, filed on May 13, 2016, provisional application No. 62/253,540, filed on Nov. 10, 2015.
- (51) Int. Cl. H04W 4/02 (2018.01) H04L 12/26 (2006.01) (Continued)
- (52) U.S. Cl.

CPC ........ H04W 72/0453 (2013.01); H04L 12/44 (2013.01); H04L 43/0888 (2013.01); H04L 43/0894 (2013.01); H04L 43/10 (2013.01); H04L 43/16 (2013.01); H04L 45/20 (2013.01); H04W 4/023 (2013.01); H04W 24/06 (2013.01); H04W 24/08 (2013.01); H04W 36/30 (2013.01);

(Continued)

#### (58) Field of Classification Search

CPC . H04L 12/44; H04L 43/0888; H04L 43/0894; H04L 43/10; H04L 43/16; H04L 45/20; H04W 4/023; H04W 24/04; H04W 24/06; H04W 24/08; H04W 36/30; H04W 36/36; H04W 40/12; H04W 72/0453; H04W 72/085; H04W 76/10; H04W 76/15; H04W 84/12; H04W 84/18

See application file for complete search history.

#### (56) References Cited

#### U.S. PATENT DOCUMENTS

7,155,167	B1*	12/2006	Carty	H04W 24/00
				455/67.11
7,502,354	B1 *	3/2009	Maufer	H04L 12/413
				370/338
		(Cont	tinued)	

#### OTHER PUBLICATIONS

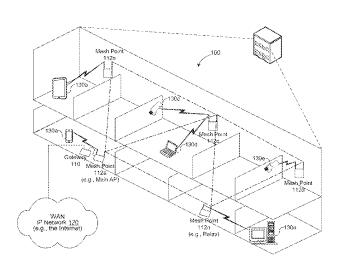
"WLAN High Availability", Technical white paper; Hewlett-Packard Development Company, L.P., Oct. 2014, 8 pages.

Primary Examiner — Asad M Nawaz Assistant Examiner — Kai Chang (74) Attorney, Agent, or Firm — Perkins Coie LLP

#### (57) ABSTRACT

Introduced here are techniques to provide automated mesh point survey and guided installation for assisting the installation and configuration of a wireless mesh network. Additional implementation techniques are also introduced including, for example, link rate estimation, roaming, and dedicated backhaul link implementation in such wireless mesh network, are also discussed. Among other benefits, this disclosure provides an integral solution where multiple wireless local area network (WLAN) mesh point devices are deployed in a relatively large environment with potential dead spots, such as a home or an office.

#### 21 Claims, 61 Drawing Sheets



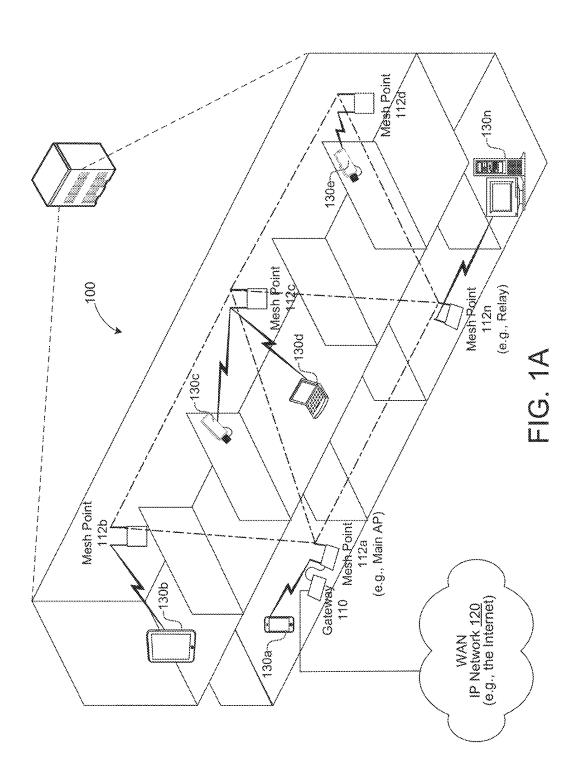
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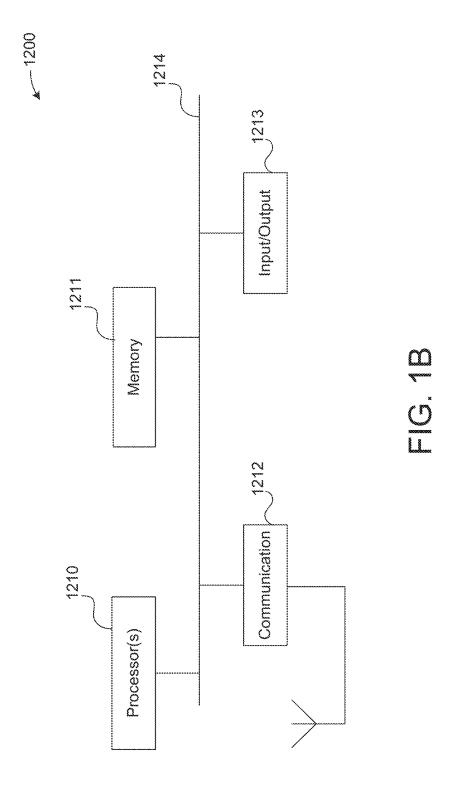
(51)	Int CI			2010/0246416 A1*	0/2010	Sinha H04W 24/06
(51)	Int. Cl.		(2007, 01)	2010/0240410 AT	9/2010	370/250
	H04L 12/4		(2006.01)	2010/0260146 A1	10/2010	
	H04W 24/0		(2009.01)	2010/0291931 A1		Suemitsu et al.
	H04W 24/0	16	(2009.01)	2011/0081903 A1		Cai et al.
	H04W 24/0	8	(2009.01)	2011/0250926 A1	10/2011	Wietfeldt et al.
	H04W 36/3	80	(2009.01)	2011/0286404 A1	11/2011	Abraham et al.
	H04W 36/3	6	(2009.01)	2011/0299422 A1		Kim et al.
	H04W 40/1		(2009.01)	2012/0020319 A1	1/2012	Song et al.
	H04W 72/0		(2009.01)	2012/0129517 A1*	5/2012	Fox H04L 41/5025
	H04W 72/0			2012/0224401	0/2012	455/425
	H04W 76/I		(2009.01)	2012/0224481 A1		Babiarz et al. Babiarz et al.
			(2018.01)	2012/0224484 A1		Mochida et al.
	H04W 76/1		(2018.01)	2012/0225646 A1 2012/0294200 A1		Wang et al.
	H04W 84/I	2	(2009.01)	2013/0194948 A1		Mallik et al.
	H04W 84/I	8	(2009.01)	2014/0233412 A1		Mishra et al.
	H04L 12/7.	33	(2013.01)	2014/0254400 A1*		Zhou H04L 1/0026
(52)	U.S. Cl.					370/252
()		H04W	36/36 (2013.01); H04W 40/12	2014/0270306 A1	9/2014	Luna et al.
			H04W 76/15 (2018.02); H04W	2015/0018028 A1		Uplenchwar et al.
			6.01); H04W 72/085 (2013.01);	2015/0029067 A1		Donaldson et al.
	2			2015/0049616 A1*	2/2015	Ho H04W 24/02
			76/10 (2018.02); H04W 84/12			370/252
		(20	13.01); <i>H04W 84/18</i> (2013.01)	2015/0092681 A1		Fernando et al.
(50		D 6	CU. I	2015/0103685 A1*	4/2015	Butchko H04L 43/50
(56)		Referei	ices Cited	2015/0215521 11#	5/2015	370/252
	TIC	DATENIT	DOCUMENTS	2015/0215791 A1*	7/2015	Geller H04W 24/02
	U.S	. PALEN I	DOCUMENTS	2015/0264614 4.1	0/2015	455/446
	7,567,822 B2	* 7/2000	Hart H04W 16/18	2015/0264614 A1		Stager et al.
	7,307,822 B2	1/2009	370/310	2015/0334750 A1 2016/0007273 A1	11/2015	Pang et al.
	8,248,948 B2	8/2012	Weil et al.	2016/0029384 A1*		Sidhu H04W 72/0453
	9,001,767 B1		Gatewood et al.	2010/0025304 A1	1/2010	370/329
	9,179,495 B1		Scherzer et al.	2016/0066249 A1*	3/2016	Dukes H04W 40/246
9	9,467,929 B2	* 10/2016	Sekine H04W 48/12	2010/00002 15 111	3/2010	370/255
	9,832,796 B2	11/2017		2016/0094946 A1*	3/2016	Keithley H04W 4/023
	9,942,709 B2		Sung G01S 5/02			455/456.3
2002	2/0042274 A1	* 4/2002	Ades H04L 41/0806	2016/0142163 A1	5/2016	Sirotkin
2006	5/0048963 A1	* 2/2005	455/445 Kubler H04W 16/06	2016/0192203 A1	6/2016	Gokturk et al.
2003	70046903 A1	3/2003	455/423	2016/0212755 A1	7/2016	Cao et al.
2007	7/0206528 A1	9/2007	Walton et al.	2016/0227544 A1*	8/2016	Katar H04W 48/16
	7/0280453 A1		Kelley et al.	2016/0269097 A1		Islam et al.
	3/0025208 A1	1/2008		2016/0286374 A1		Patil et al.
	8/0080414 A1	4/2008		2016/0308755 A1*		Garg H04L 47/122
2008	3/0247317 A1	* 10/2008	Weil H04L 43/50	2016/0366632 A1		Cui et al.
			370/237	2017/0006431 A1		Donovan et al.
	0/0046655 A1	2/2009		2017/0048913 A1		Teyeb et al.
	0/0067369 A1	3/2009		2017/0070919 A1 2017/0118705 A1*	4/2017	Chandok et al. Tran H04W 48/16
2009	9/0116407 A1	* 5/2009	Ishii H04W 24/02	2017/0118703 A1 2017/0125920 A1	5/2017	Spiel et al.
2000	V0125728 A1	* 5/2000	370/254 Mhatra H04L 45/02	2017/0127295 A1		Black et al.
2009	0/0135738 A1	3/2009	Mhatre H04L 45/02 370/256	2017/0127293 A1 2017/0127325 A1		Vikberg et al.
2000	0/0135794 A1	5/2009		2017/0127323 A1 2017/0164260 A1*	6/2017	
	0/0221238 A1		Ko et al.	2017/0164323 A1		Markhovsky et al.
	0/0252127 A1		Rangarajan et al.	2017/0215091 A1	7/2017	•
	)/0118830 A1		Stephenson et al.	2017/0238189 A1		Nolan et al.
	)/0157888 A1		Aggarwal H04L 12/1868	2017/0251410 A1		Comstock
			370/328	2017/0325243 A1		Yasukawa et al.
2010	)/0231473 A1	* 9/2010	Shtrom H01Q 1/2291			
			343/757	* cited by examiner		

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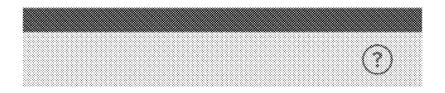
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# 1. Install the Base Orbi



# 2. Install the other Orbis









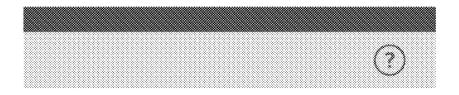
# 3. Test your new Wifi!



Letsaan L

FIG. 2

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# 1. Install the Base Orbi



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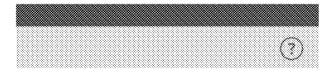
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FIG. 3A

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Hang tight...



# Connecting to Orbi network

Setup: connect to Base

Change SSID / password

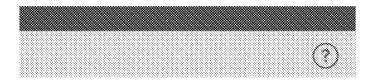
**Preset SSID Conflicts** 

FIG. 3B

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You Rock!



You are now connected to the base

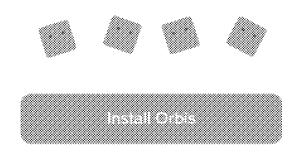


FIG. 3C

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# 1. Install the Base Orbi!



Coach is going to get warmed up so that he's ready to help! Let's see what he's doing...

- ✓ Stretching
- ✓ Doing Jumping-jacks
  - ✓ Running in Place
    He's good to go!

Learn out about the process.

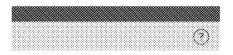
Wifi Name	Require
<b>%</b> DuplicateWifiNa	ime
	opease choose another the other will signal
Password	Reguire
Password MyPassword123	Require
	Require

FIG. 3D

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## Connect to your secure Wifi



tests connect to your secure wife

## 1. Go to your iOS Settings



# 2. Select your Network



## 3. Use your password

MyPassword123

#### 4. Come back to the App

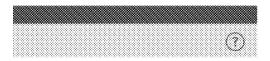


FIG. 3E

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## Orbi Installed!





Looks like your current internet speed is 80mbit/s. We looks like you can get 20mbit/s coverage for your whole home!

Learn out about the process.

#### Your Wifi

Username

Smith-Wifi

Password

MyPassword123

Edit information

#### Your Netgear Credentials

Username

MyAdmin

Password

MyNewPassword

Share Info

FIG. 3F

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**Sheet 10 of 61** 

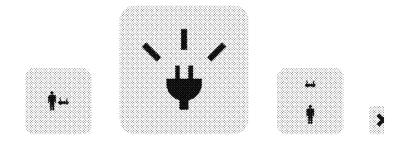
US 10,292,159 B2



Not your first radea with orbi? Skip

# Installing Orbi Pt.1

The first step is estimating the right spot. You'll see some of these screens. Scroll through them to learn more:



**Sweet Spot** 

Lorem ipsum dolor sit amet, constempor egpulvinar posuere ex, a ultrices ni:Lorem

Installing Orbi Pt.2 »

FIG. 4A

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**Sheet 11 of 61** 

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Not your first rodeo with orbit. Skip

#### Installing Orbi Pt.2

The second step when installing is to make sure the orbi is in the right spot. You'll see one of these confirmation screens:

#### Great Work!





Lorem ipsum dotor sit amet, constempor egpulvinar posuere ex, a ultrices, nittorem

#### Too Far...





Lorem (psum dolor sit amet, constempor appulvinar posuere ex. a ultrices ni.Lorem

#### Too Close...





Lorem ipsum deler sit amet, constempor agpulvinar posuera ex, a ultrices nitLorem

Testing Wiff >







FIG. 4B

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# Wifi Testing

Lorem ipsum dolor sit amet, constempor egpulvinar posuere ex, a ultrices ni:



Bad Wifi Lorem ipsum dolor sit amet, constempor egpulvinar



OK Wifi Lorem ipsum dolor sit amet, constempor egpulvinar



Great Wifi Lorem ipsum dolor sit amet, constempor egpulvinar

Check out the Interface »

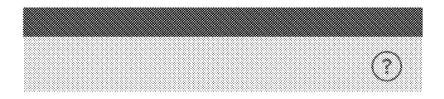


FIG. 4C

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## Almost Ready to Install!

Orbi works best if you know where you have bad wifi in your house. We reccomend that you survey your house first. Your base Orbi may have extended your previous signal.

If you have a good idea of where you're having bad wifi, you can get to installing right away.

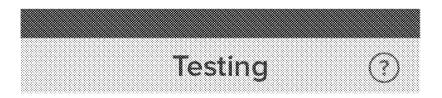
Skip Wifi Survey

FIG. 5A

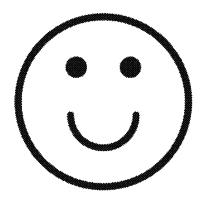
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# You have great wifi here!



Run Speed Test

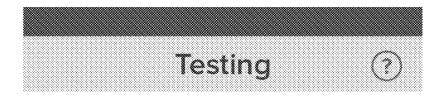
Install the next extension after you check out your coverage

FIG. 5B

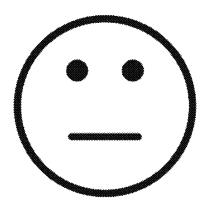
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#### You have ok wifi here!



Run Speed Test

Install the next extension after you check out your coverage

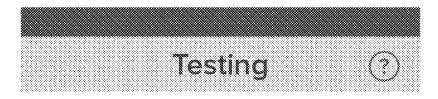
Vanitio morove il

FIG. 5C

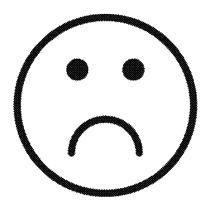
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#### You have bad wifi here!



Run Speed Test

Install the next extension after you check out your coverage

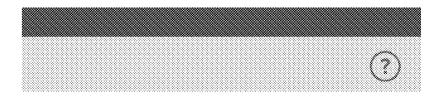
want to improve it.

FIG. 5D

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# 2. Install the Orbis

Grab your first Orbi



Collin

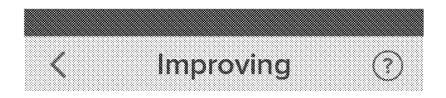
I need help

FIG. 6A

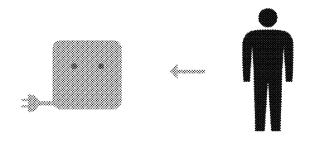
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# Head back to your base Orbi



We'll let you know what to do when you get there.

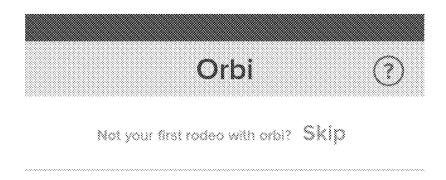
I'm here. What do I do...

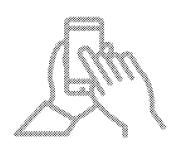
FIG. 6B

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Watch Video

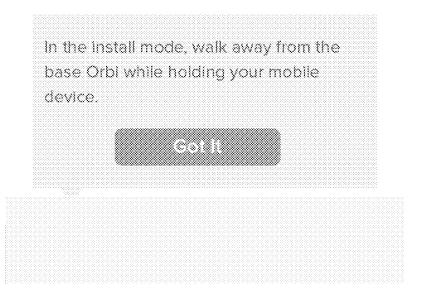
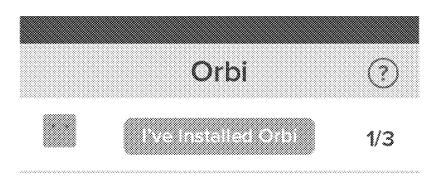


FIG. 6C

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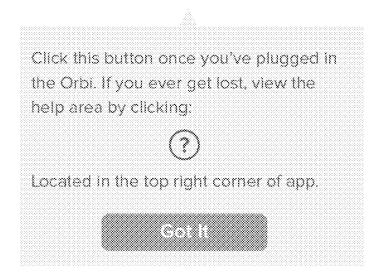
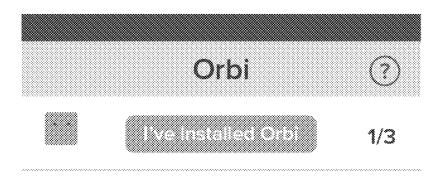




FIG. 6D

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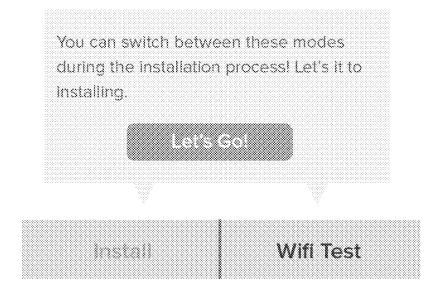


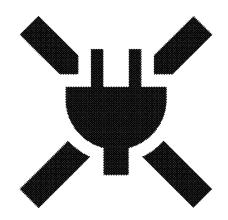
FIG. 6E

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You're too close to the Base!

Move farther away from it.

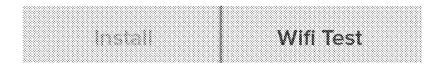


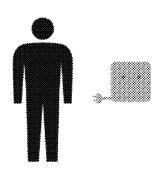
FIG. 7A

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You're still a little too close to the Base!
Keep moving farther away from it to get
the best configuration.

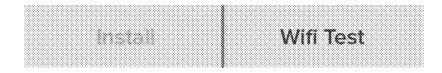


FIG. 7B

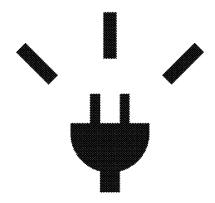
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Find the closest outlet to install!



Bill and the Base will be the perfect distance if you plug him in now!

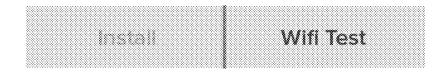
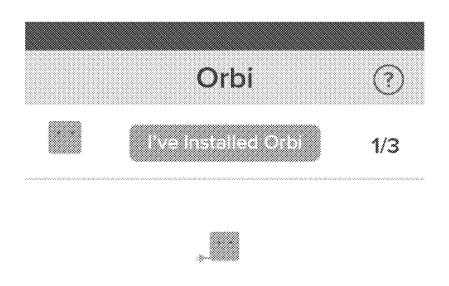


FIG. 7C

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You're little too far from the Base! Move closer to him to get the best configuration.

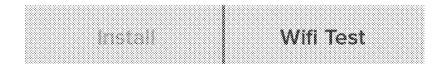
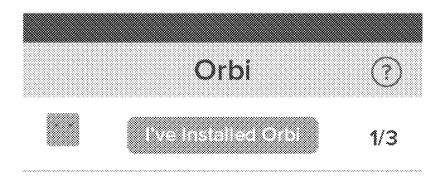


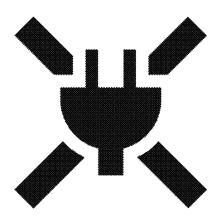
FIG. 7D

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You're too far from the Base!

Move closer to him.

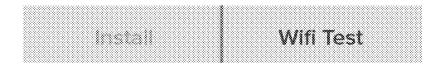
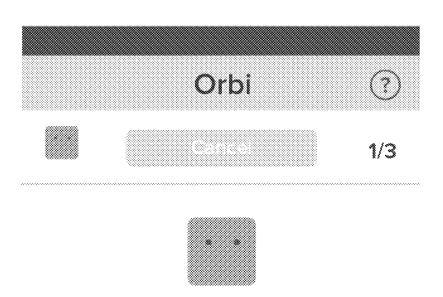


FIG. 7E

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Installing Orbi...

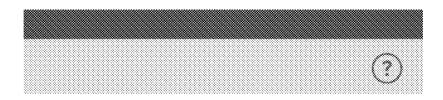
Hang in there, it will a take a few minutes to get the Orbi up and running.

FIG. 8A

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### **Great Work!**





Your Orbi and the Base Orbi are talking to each other.

Next let's see how well they work together

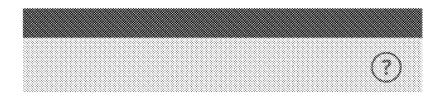
Test your ora

FIG. 8B

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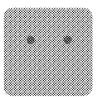
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The Orbi might be a little too far.





Your signal could be faster, but Bill is still extending the wifi.

Try moving Bill closer to the Base!

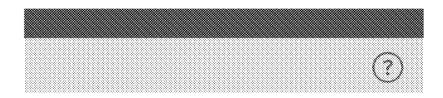
No thanks

FIG. 8C

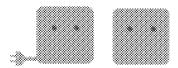
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The Orbi might be a little too close.



Your signal could be extended farther. Try moving Bill farther away.

Fire a Settle Spot

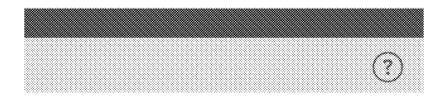
No thanks

FIG. 8D

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#### **Great Work!**





You moved the Orbi in to a better spot. You rock.

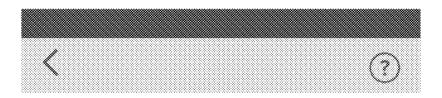
Now, let's make sure you've eliminated that dead spot.

FIG. 8E

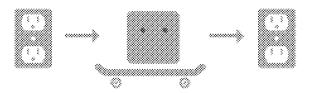
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# Moving Orbi



Unplug the Orbi and plug it into the next closest outlet let us know when he's plugged back in.

FIG. 8F

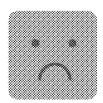
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## Uh Oh!



This spot isn't as good as we thought! In fact, it's worse than the first spot. Let's move it back to the first location and keep moving forward!



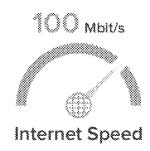
FIG. 8G

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Speed From Base

Lorem ipsumLorem ipsumLorem ipsumLorem ipsumLorem ipsum



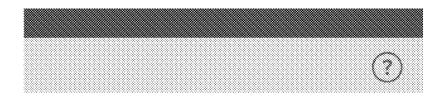


FIG. 9

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Let's 2X the Orbi to improve the speed

Grab another Orbi and move to the last installed Orbi



600

I need help

FIG. 10

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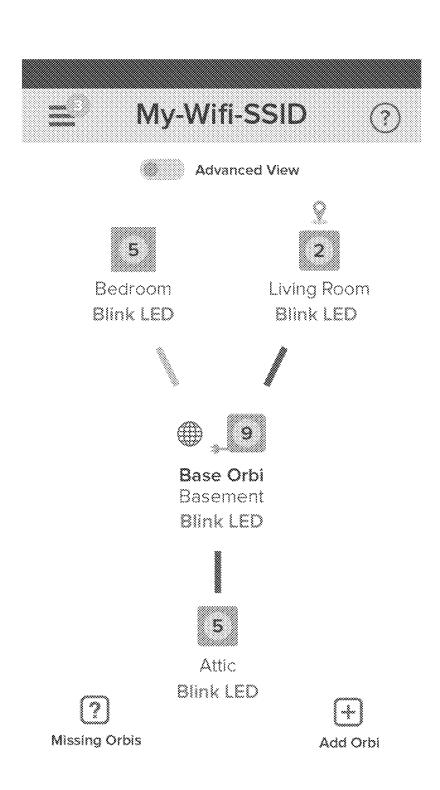


FIG. 11A

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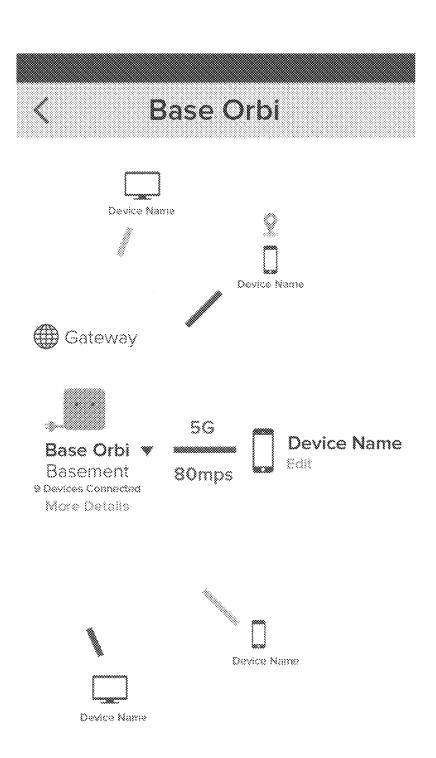
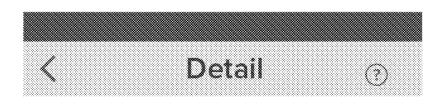


FIG. 11B

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IP Address: 198.162.10.3

MAC Address: 00-50-56-C0-00-01 Internet Speed: 100 mbps WiFi Band: 5GHz

FIG. 11C

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Phone	Device type
Apple iPhone 5S	11n 1x1
Apple iPhone 6	11ac 1x1
Apple iPhone 6S	11ac 2x2
Samsung Galaxy S4	11n 1x1
Samsung Galaxy S5 LTE-A	11ac 2x2
Samsung Galaxy S6	11ac 2x2
Apple iPad Air 2	11ac 2x2

FIG. 12

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Channel	Lower	Center	Upper
~ 5 2 C 2 2 2 2 2 3 C 3 C 3	Frequency	Frequency	Frequency
1	2.401	2.412	2.423
2	2.406	2.417	2.428
3	2.411	2.422	2.433
4	2.416	2.427	2.438
5	2.421	2.432	2.443
6	2.426	2.437	2.448
7	2.431	2.442	2.453
8	2.436	2.447	2.458
9	2.441	2.452	2.463
10	2.451	2.457	2.468
11	2.451	2.462	2.473

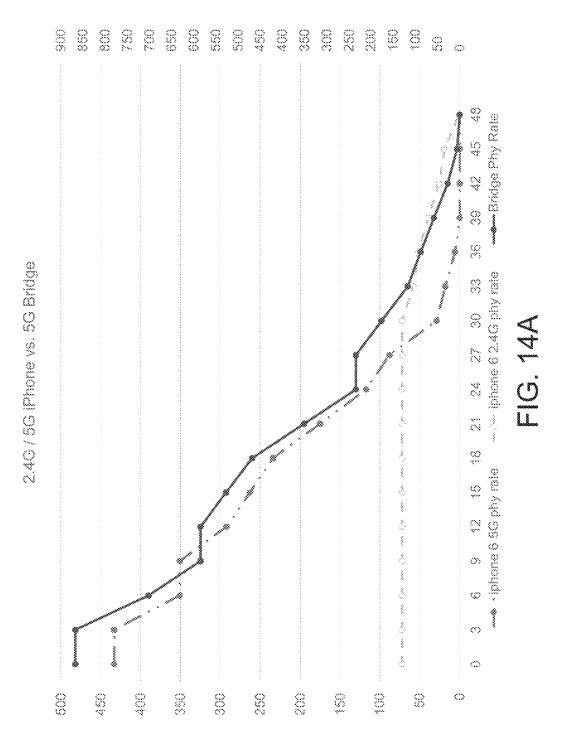
FIG. 13A

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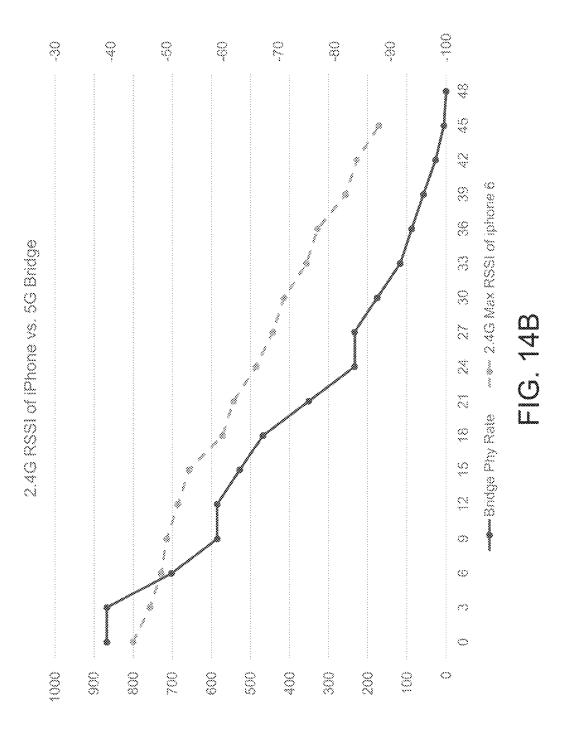
CHANNEL NUMBER	FREQUENCY MHZ	NORTH AMERICA (FCC)
36	5180	\$_**
40	5200	<b>V</b>
44	5220	<b>V</b>
48	5240	<b>*</b>
52	5260	DFS
56	5280	DFS
60	5300	DFS
64	5320	DFS
100	5500	DFS
104	5520	DFS
108	5540	DFS
112	5560	DFS
116	5580	DFS
120	5600	No Access
124	5620	No Access
128	5640	No Access
132	5660	DFS
136	5680	DFS
140	5700	DFS
149	5745	√
153	5765	V
157	5785	<b>₩</b>
161	5805	✓
165	5825	<b>/</b>

FIG. 13B

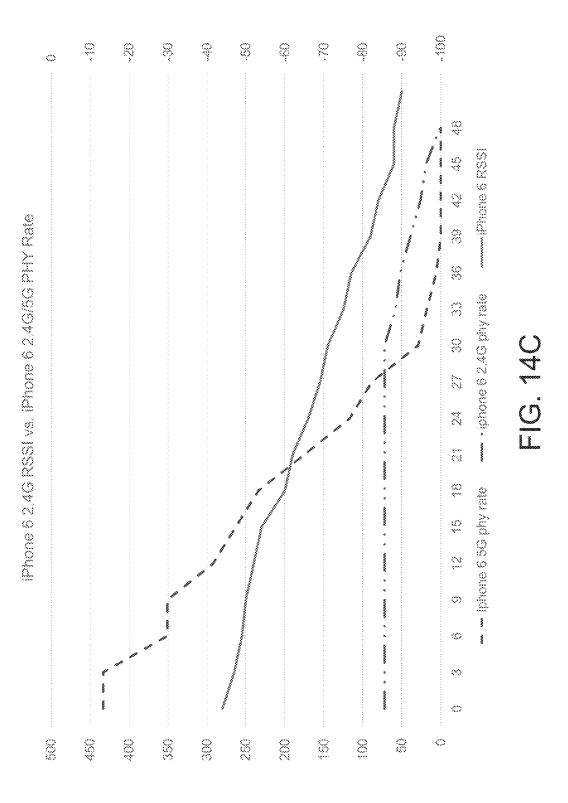
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#### 5G 80MHz 2x2 Rates

Mes	Modulation	Nee	LGI PHY rate(Mbps)
0	BPSK	2	58.5
1	QPSK	2	117
2	QPSK	2	175.5
3	16-QAM	2	234
4	16-QAM	2	351
5	64-QAM	2	468
6	64-QAM	2	526.5
7	64-QAM	2	585
8	256-QAM	2	702
9	256-QAM	2	780

FIG. 15A

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## 5G 80MHz 1x1 Rates

MCS	Modulation	NSS	LGI PHY rate(Mbps)
0	BPSK	1	29.3
1	QPSK	1	58.5
2	QPSK	1	87.8
3	16-QAM	1	117
4	16-QAM	1	175.5
5	64-QAM	1	234.0
6	64-QAM	1	263.3
7	64-QAM	1	292.5
8	256-QAM	1	351.5
9	256-QAM	1	390.0

FIG. 15B

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### 2.4G 20MHz 2x2 Rates

MCS	Modulatio	n NSS	LGI PHY rate	e(Mbps)
0	BPSK	2	13	
1	QPSK	2	26	
2	QPSK	2	39	
3	16-QAM	2	52	
4	16-QAM	2	78	
5	64-QAM	2	104	
6	64-QAM	2	117	
7	64-QAM	2	130	

FIG. 15C

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# 2.4G 20MHz 1x1 Rates

MCS	Modulation	NSS	LGI PHY rate(Mbps)
0	BPSK	1	6.5
1	QPSK	1	13
2	QPSK	1	19.5
3	16-QAM	1	26
4	16-QAM	1	39
5	64-QAM	1	52
6	64-QAM	1	58.5
7	64-QAM	1	65

FIG. 15D

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Instruction	TPUT (mbps)
Too close	> 180
A bit close	140-180
Good	120-140
A bit far	80-120
Too far	< 80

Example Instruction Mapping for Link-Orbi-5G

FIG. 16

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WLAN Coverage	TPUT (mbps)
Good	> 30
Ok	10-30
Bad	< 10

FIG. 17A

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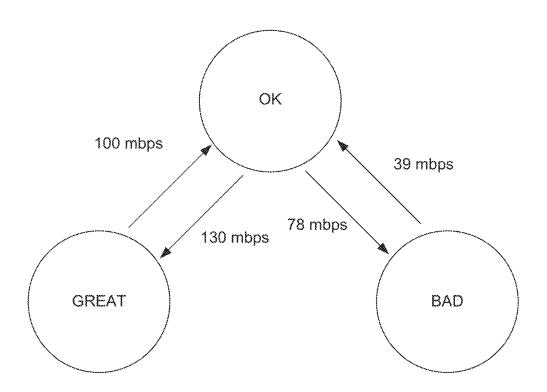


FIG. 17B

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Device	802.11v	802.11k	802.11r
iPhone 6s	Yes	Yes	Yes
iPhone 6s Plus	Yes	Yes	Yes
iPhone 6	Yes	Yes	Yes
iPhone 6 Plus	Yes	Yes	Yes
iPhone 5s	Yes	Yes	Yes
iPhone 5c	Yes	Yes	Yes
iPad Air	Yes	Yes	Yes
iPad Air 2	Yes	Yes	Yes
iPad Mini 3	Yes	Yes	Yes
iPad Mini 2 Retina	Yes	Yes	Yes

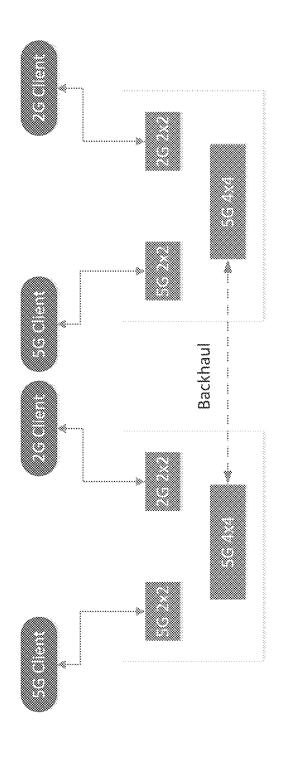
FIG. 18A

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Device	802.11v	802.11k	802.11r
Galaxy s6	No	Yes	Yes
Galaxy s5	No	Yes	Yes
Galaxy s4	No	Yes	Yes
HTC One	Yes	Yes	Yes

FIG. 18B

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#### Rate Estimation Process Based on Device Class

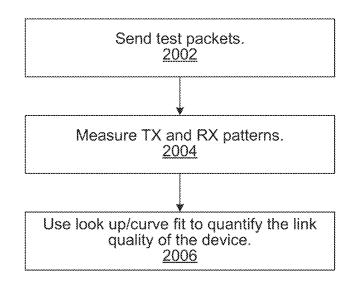


FIG. 20A

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# Characterization of Device Type and Collection of Training Data

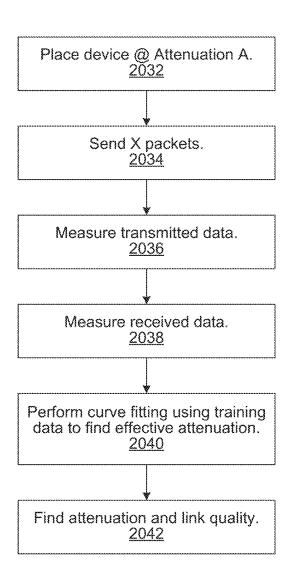


FIG. 20B

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#### **Device Classification**

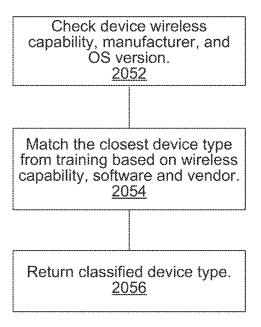


FIG. 20C

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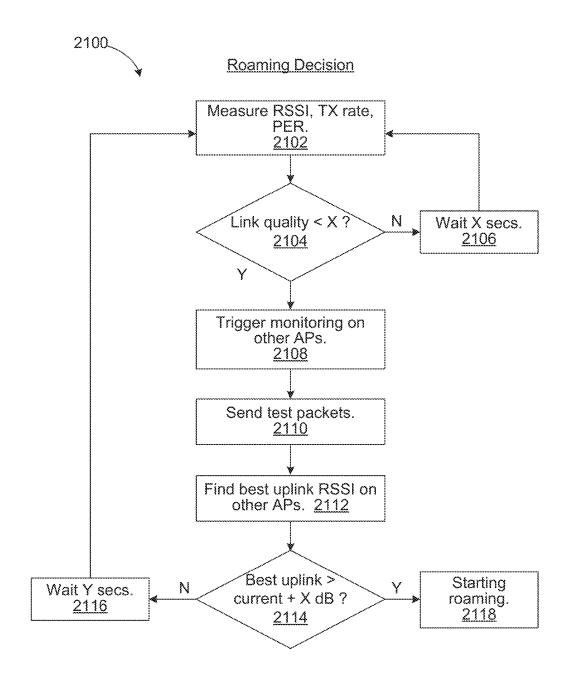


FIG. 21

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#### Evaluate Backhaul

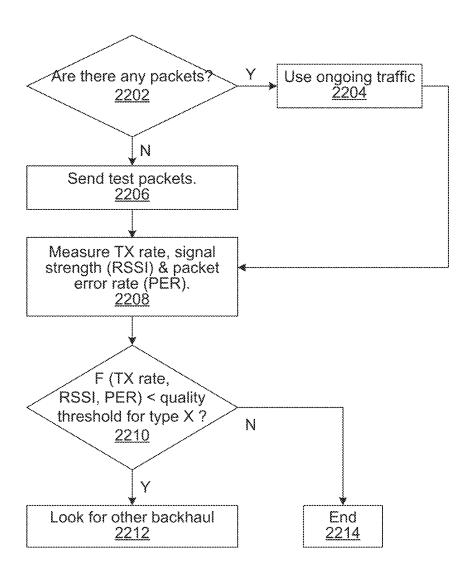


FIG. 22A

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Finding Alternative Backhaul

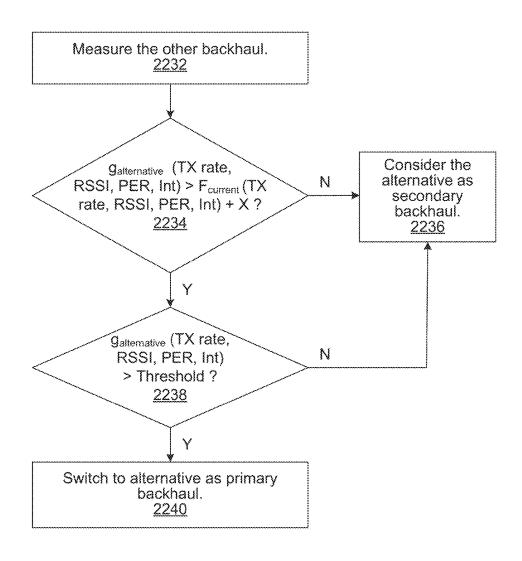


FIG. 22B

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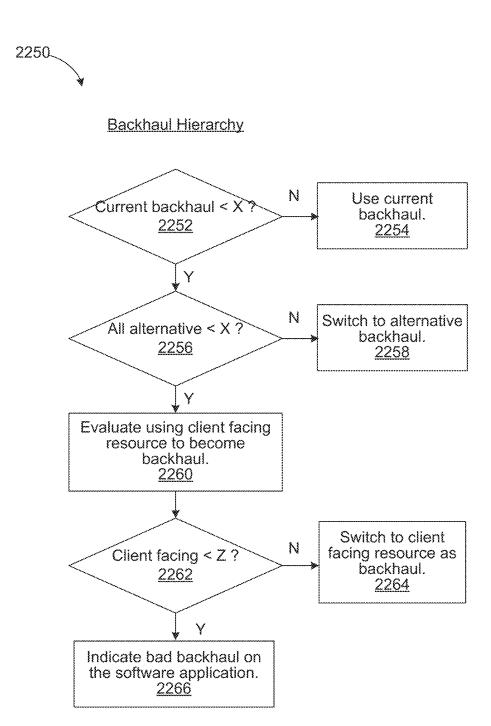


FIG. 22C

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# AUTOMATED MESH POINT SURVEY AND GUIDED INSTALLATION FOR A WIRELESS MESH NETWORK

#### COPYRIGHT NOTICE

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## CROSS-REFERENCE TO RELATED APPLICATIONS

This application is entitled to the benefit of and the right of priority to U.S. Provisional Patent Application No. 62/253,540, entitled "METHOD AND APPARATUS FOR WHOLE HOME WI-FI COVERAGE", filed Nov. 10, 2015; and to U.S. Provisional Patent Application No. 62/336,503, entitled "DEDICATED BACKHAUL FOR WHOLE HOME COVERAGE", filed May 13, 2016; all of which are 25 mented. hereby incorporated by reference in their entireties.

This application is related to co-pending U.S. patent application Ser. No. 15/287,704, entitled "RATE ESTIMATION IN A WIRELESS MESH NETWORK", filed Oct. 6, 2016; U.S. patent application Ser. No. 15/287,706, entitled "ROAMING IN A WIRELESS MESH NETWORK", filed Oct. 6, 2016; U.S. patent application Ser. No. 15/287,711, entitled "DEDICATED BACKHAUL LINK FOR A ROBUST WIRELESS MESH NETWORK", filed Oct. 6, 2016; and U.S. patent application Ser. No. 15/271,912, 35 entitled "DEDICATED BACKHAUL FOR WHOLE HOME COVERAGE", filed Sep. 21, 2016; all of which are hereby incorporated by reference in their entireties.

#### TECHNICAL FIELD

The present disclosure relates generally to electronic communications, and more specifically, to techniques for implementing a local area wireless mesh network.

#### BACKGROUND

In an indoor environment such as a large house or an office, a single access point (AP) often may not be able to cover the entire indoor area.

One straightforward attempt to solve the problem is to increase the transmission power. However, solely relying on increasing the transmission power on the AP would be a poor solution. In addition to regulatory bodies that limit the transmission power of the AP, it is typical that the wireless 55 local area network (WLAN) communications link between an AP and a clients is highly asymmetrical, that is, the client's transmission power is usually lower than the AP's transmission power. The client's antenna efficiency conventionally is also lower than the AP. Moreover, a portable 60 client (e.g., a mobile phone) often is hand held by a user, and because of the signal absorption and disruption by the human body, signals from such portable client may reach the AP at even lower powers. Yet, many commonly used WLAN protocols require each side of the link to receive an acknowl- 65 edgement (ACK) for the packets that are transmitted (e.g., in a downlink direction). If one side of the WLAN link cannot

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receive from the other side of the link, no packet can be transmitted to the other side of the link.

Instead of one AP with high transmission power and high performance antennas, an attractive alternative is using a multitude of smaller APs that are deployed in the environment in a scattered, distributed manner. These smaller APs form a wireless mesh network, and therefore are also called "mesh points." When a client device establishes connection with one of the mesh points, the mesh points can forward the traffic to the mesh point that is connected to the gateway, which in turn communicates the traffic to the outside world (e.g., wide area network (WAN) and/or "the Internet"). However, there are also many challenges associated with implementing these wireless mesh networks, especially in a 15 home environment where a layman user may be involved in installing and configuring these mesh points.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The present embodiments are illustrated by way of example and are not intended to be limited by the figures of the accompanying drawings.

FIG. 1A is a representative wireless mesh network environment within which some embodiments may be implemented.

FIG. 1B is a block diagram of a computing device that may be used to implement the techniques introduced here.

FIG. 2 is an example user interface illustrating a welcome page outlining the general functionalities of a mobile software application that implements one or more techniques introduced here.

FIGS. 3A-3F are example user interfaces illustrating processes for assisting a user in installing the first, main mesh point in a wireless mesh network.

FIGS. 4A-4C are example user interfaces illustrating introductory processes for assisting a user in installing additional mesh points in the wireless mesh network.

FIGS. 5A-5D are example user interfaces illustrating processes for assisting a user in finding weak reception spots
40 (or "dead spots) for potential locations to install additional mesh points.

FIGS. 6A-6E are example user interfaces illustrating further introductory processes for assisting a user in installing additional mesh points in the wireless mesh network.

FIGS. 7A-7E are example user interfaces illustrating guiding instructions for assisting a user in installing additional mesh points in the wireless mesh network.

FIGS. 8A-8G are example user interfaces illustrating diagnostic processes of installed mesh points in the wireless 50 mesh network.

FIG. 9 is an example user interface illustrating another diagnostic process for installed mesh points in the wireless mesh network.

FIG. 10 is an example user interface illustrating an optional process for installing additional mesh points for bandwidth (e.g., as opposed to coverage) in the wireless mesh network.

FIGS. 11A-11C are example user interfaces illustrating further diagnostic and configuration processes of the wireless mesh network.

FIG. 12 is an example list of type of devices.

FIG. 13A is a table illustrating the upper, center, and lower frequencies of different Wireless LAN (WLAN) channels in a typical 2.4 GHz frequency band.

FIG. 13B is a table illustrating example frequencies of different Wireless LAN (WLAN) channels available (e.g., in the United States) in a typical 5 GHz frequency band.

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FIG. 14A-14C are different statistical data gathered for mapping the performance of a particular type of device to the anticipated performance of an additional mesh point, if installed at the same location.

FIGS. **15**A-**15**D are example tables of closest PHY rates 5 that can be used for throughput estimation.

FIG. 16 is an example table for mapping between estimated link rate (throughput) and user instruction, for a mesh point operating in a particular frequency band.

FIG. 17A is an example table for mapping between <sup>10</sup> estimated link rate (throughput) and wireless network coverage.

FIG. 17B is an alternative example that implements a hysteresis mechanism for mapping between estimated link rate and wireless network coverage.

FIGS. 18A-18B are a list of known user devices with their capabilities to follow or otherwise coordinate with the mesh network in performing intelligent roaming.

FIG. 19 illustrate an example diagram showing a back-haul link established between two mesh points (e.g., in the 20 mesh network).

FIGS. 20A-200 are example flow charts illustrating methods for performing rate estimation, device characterization, and device classification in a mesh network disclosed herein.

FIG. 21 is an example flow chart illustrating a method for 25 performing roaming decision in a mesh network disclosed herein.

FIGS. 22A-22C are example flow charts illustrating methods for performing switching and selection of dedicated backhaul in a mesh network disclosed herein.

Like reference numerals refer to corresponding parts throughout the figures and specification.

#### DETAILED DESCRIPTION

Generally speaking, as mentioned above, a better alternative to an access point (AP) with large transmission power is a wireless mesh network with a multitude of smaller APs, deployed in the environment in a scattered, distributed manner. These smaller APs (or mesh points) are often 40 marketed as so-called "range extenders" or "repeaters." A range extender generally works by associating itself to a user's main AP and receiving Internet connection from the main AP. Then, clients such as mobile phones, laptops and desktop computers, and smart devices can associate to the 45 range extender.

However, there are also many challenges associated with implementing wireless mesh networks with these range extenders, especially in a home environment where a layman user may be involved in installing and configuring these 50 devices. One common problem with the installation process involving layman users is that users may not be able to install this mesh points in their best locations, for example, because the users do not know where to put each one of them to cover particular dead spots (i.e., locations with poor 55 reception) in the house, how to find these dead spots, and so forth. In addition, many conventional range extenders are designed separately (and much like an afterthought) from the main AP, and therefore generally do not have much coordination with the main AP. In many of these conven- 60 tional settings, it is up to the connection client to decide what happens (e.g., what action or reaction to take when a certain type of issues takes place, such as poor reception) in the wireless mesh network, which may adversely affect the efficiency and stability of such network. For example, roam- 65 ing between the main AP and repeater can be a common issue where the clients may be stuck in connection with the

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main AP or a repeater mesh point and may not roam to the mesh point that can provide the clients with the best throughput. All too often, roaming between multiple range extenders and the main AP may not function as designed, and different roaming methods may be required for different types of clients. Other common issues include that the extender may not use the best band(s) to connect to the rest of the mesh network, or that the extender may not use the best band to forward the traffic when extender is connected to two or more bands on the main AP.

Introduced here, accordingly, are techniques to provide automated mesh point survey and guided installation for assisting the installation and configuration of a wireless mesh network. Additional implementation techniques are also introduced including, for example, rate estimation, roaming, and dedicated backhaul link implementation in such wireless mesh network, are also discussed. Among other benefits, this disclosure provides an integral solution where multiple wireless local area network (WLAN) mesh point devices are deployed in a relatively large environment with potential dead spots, such as a home or an office. As is introduced in more details below, one or more embodiments can aid the user in installation, can aid user to verify that installation is successful, and can aid user in upgrading an existing wireless mesh network. In some examples, the multiple device wireless mesh network may have a network control system, which may be centralized or distributed, and the network controller can decide, for example, with which mesh point each client should associate, when a client should roam, which topology the network should be using, with which band should the client associate, which band should be used for the traffic forwarding, and where to install a new mesh point to provide more coverage in the target

In the following description, numerous specific details are set forth such as examples of specific components, circuits, and processes to provide a thorough understanding of the present disclosure. Also, in the following description and for purposes of explanation, specific nomenclature is set forth to provide a thorough understanding of the present embodiments. However, it will be apparent to one skilled in the art that these specific details may not be required to practice the present embodiments. In other instances, well-known circuits and devices are shown in block diagram form to avoid obscuring the present disclosure.

The term "coupled" as used herein means connected directly to or connected through one or more intervening components or circuits. Any of the signals provided over various buses described herein may be time-multiplexed with other signals and provided over one or more common buses. Additionally, the interconnection between circuit elements or software blocks may be shown as buses or as single signal lines. Each of the buses may alternatively be a single signal line, and each of the single signal lines may alternatively be buses, and a single line or bus might represent any one or more of a myriad of physical or logical mechanisms for communication (e.g., a network) between components. The present embodiments are not to be construed as limited to specific examples described herein but rather to include within their scope all embodiments defined by the appended claims.

System Overview

FIG. 1A is a representative wireless mess network environment 100 within which some embodiments may be implemented. The environment 100 includes a gateway 110,

a main mesh point 112a, a number of additional mesh points 112b-112n, a wide area network (WAN) 120, and a plurality of client devices 130a-130n.

The gateway 110 can be a default gateway, which in computer networking sense, is the node that is assumed to 5 know how to forward packets on to other networks. In a home or small office environment, the gateway device 110, such as a digital subscriber line (DSL) router or cable router that connects the local area network (LAN) (e.g., the network established by mesh points 112a-112n) to the Internet 10 (e.g., network 120) acts as the default gateway for all network devices. For example, the gateway 110 and the network 120 may be connected via a twisted pair cabling network, a coax cable network, a telephone network, or any suitable type of connection network. In some embodiments, 15 the base station 110 and the network 120 may be connected wirelessly (e.g., which may include employing a data traffic network based on wireless telephony services such as 3G, 3.5G, 4G LTE and the like).

The main mesh point 112a, which is illustrated as operating in "main access point (AP)" mode, is coupled together with the network 120 so that main mesh point 112a can enable, either directly or through the additional mesh points 112b-112n, the client devices 130a-130n to exchange data to and from the network 120. The technologies supporting the 25 communications between the gateway 110 and the main mesh point 112a may include Ethernet (e.g., as described in IEEE 802.3 family of standards) and/or other suitable types of area network technologies.

The additional mesh points 112b-112n connect to the 30 main mesh point 112a, either directly or indirectly, via one or more wireless network communication technologies, such as WLAN (e.g., Wi-Fi), Bluetooth, etc. The IEEE 802.11 standards are a set of WLAN technology specifications commonly seen for implementing wireless local area net- 35 work (WLAN) computer communication. Examples of different wireless communication protocols in the IEEE 802.11 family of standards can include IEEE 802.11a, IEEE 802.11b, IEEE 802.11n, IEEE 802.11ac, and so forth. When a client device (e.g., 130a, 130b, 130n) establishes connec-40 tion with one of the mesh points 112b-112n, the mesh points 112b-112n can forward the traffic to the mesh point 112a that is connected to the gateway 110, which in turn communicates the traffic to the outside world (e.g., wide area network (WAN) 120 and/or "the Internet").

Although not shown for simplicity, the mesh points 112a-112n may include one or more processors, which may be general-purpose processors or may be application-specific integrated circuitry that provides arithmetic and control functions to implement the techniques disclosed herein on 50 the mesh points 112a-112n. The processor(s) may include a cache memory (not shown for simplicity) as well as other memories (e.g., a main memory, and/or non-volatile memory such as a hard-disk drive or solid-state drive. In some examples, cache memory is implemented using 55 SRAM, main memory is implemented using DRAM, and non-volatile memory is implemented using Flash memory or one or more magnetic disk drives. According to some embodiments, the memories may include one or more memory chips or modules, and the processor(s) on the mesh 60 points 112a-112n may execute a plurality of instructions or program codes that are stored in its memory.

The client devices 130a-130n can connect to and communicate with the mesh points 112a-112n wirelessly including, for example, using the IEEE 802.11 family of standards 65 (e.g., Wireless LAN), and can include any suitable intervening wireless network devices including, for example, base

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stations, routers, gateways, hubs, or the like. Depending on the embodiments, the network technology connecting between the client devices 130a-130n and the mesh points 112a-112n can include other suitable wireless standards such as the well-known Bluetooth communication protocols or near field communication (NFC) protocols. In some embodiments, the network technology between the devices 130a-130n and the mesh points 112a-112n can include a customized version of WLAN, Bluetooth, or customized versions of other suitable wireless technologies. Client devices 130a-130n can be any suitable computing or mobile devices including, for example, smartphones, tablet computers, laptops, personal digital assistants (PDAs), or the like. Client devices 130a-130n typically include a display, and may include suitable input devices (not shown for simplicity) such as a keyboard, a mouse, or a touchpad. In some embodiments, the display may be a touch-sensitive screen that includes input functionalities. Additional examples of the devices 130a-130n can include network-connected cameras (or "IP cameras"), home sensors, and other home appliances (e.g., a "smart refrigerator" that can connect to

It is noted that one of ordinary skill in the art will understand that the components of FIG. 1 are just one implementation of the computer network environment within which present embodiments may be implemented, and the various alternative embodiments are within the scope of the present embodiments. For example, the environment 100 may further include intervening devices (e.g., switches, routers, hubs, etc.) among the mesh points 112a-112n, the network 120, and the client devices 130a-130n. In some examples, the network 120 comprises the Internet.

With the environment introduced above in mind, various techniques for implementing automated mesh point survey and guided installation are described in more detail below, with continued reference to the elements in FIG. 1. Also, for purposes of discussion herein, one or more devices in the plurality of mesh points 112a-112n, or the mesh network formed by the mesh points 112a-112n, may be referred to as Orbi<sup>TM</sup>, which is a trademark of NETGEAR, Inc.

Device Architecture

FIG. 1B is a high-level block diagram showing an example of a computing device 1200 that can be used to implement one or more devices (e.g., gateway 110, mesh points 112a-112n, and user devices 130a-130n) introduced here.

In the illustrated embodiment, the computing system 1200 includes one or more processors 1210, memory 1211, a communication device 1212, and one or more input/output (I/O) devices 1213, all coupled to each other through an interconnect 1214. The interconnect 1214 may be or may include one or more conductive traces, buses, point-to-point connections, controllers, adapters and/or other conventional connection devices. The processor(s) 1210 may be or may include, for example, one or more general-purpose programmable microprocessors, microcontrollers, application specific integrated circuits (ASICs), programmable gate arrays, or the like, or a combination of such devices. The processor(s) 1210 control the overall operation of the computing device 1200. Memory 1211 may be or may include one or more physical storage devices, which may be in the form of random access memory (RAM), read-only memory (ROM) (which may be erasable and programmable), flash memory, miniature hard disk drive, or other suitable type of storage device, or a combination of such devices. Memory 1211 may store data and instructions that configure the processor(s) 1210 to execute operations in accordance with

the techniques described above. The communication device 1212 may be or may include, for example, an Ethernet adapter, cable modem, Wi-Fi adapter, cellular transceiver, Bluetooth transceiver, or the like. Depending on the specific nature and purpose of the processing device 1200, the I/O devices 1213 can include devices such as a display (which may be a touch screen display), audio speaker, keyboard, mouse or other pointing device, microphone, camera, etc. Automated Mesh Point Survey and Guided Installation

As previously mentioned, it is generally hard to cover a relatively large area using a single AP. A multiple AP solution (i.e., a wireless mesh network) to cover the whole area is an attractive alternative, but there are also many challenges. Among them, the user needs to find the dead spots, the user needs to know what kind of wireless coverage (e.g., signal strength, throughput (TPUT), goodput (or application-level throughput)) is capable to carry at least the Internet speed or other services through the deployed environment, the user needs to know where to install the mesh points, and the user needs to verify that the current mesh installation is providing the coverage needed around the home, and as an additional option, to receive suggestions on how to improve the wireless coverage when needed or when the user purchases an upgraded Internet service.

Therefore, one aspect of the present disclosure is to provide a portable device (e.g., by using a mobile software application running on a user's mobile computing device) with the capability of assisting the user throughout the site survey and installation process. Generally speaking, the 30 disclosed application can assist the user to connect the first mesh point to where the user's gateway (e.g., a cable modem) is and enter personal settings (e.g., a desired SSID/password). Then, the application can guide the user to walk around the environment to determine where the dead 35 spots (i.e., locations with poor WLAN reception) are. Afterwards, the application can instruct the user where to install the additional mesh points to increase the coverage to reduce or eliminate the dead spots. The application can verify whether the installation is a good one (e.g., functioning 40 properly and achieving a target transmission rate), and if not, provide feedbacks to the user accordingly. Afterwards, the application can perform an Internet speed test, and can allow the user to walk around to perform coverage surveys to verify that the available transmission rate and coverage 45 meets his or her need. If the user later wants to upgrade the Internet connection and add additional mesh points to provide more bandwidth to the existing network structure, the application can assist the user to achieve that as well. As such, example functions of such portable device (e.g., as 50 enabled by the mobile application) introduced here include:

- (1) surveying the wireless coverage in the environment;
- (2) communicating the type and capabilities of the user's device (on which the mobile application is installed) to the wireless mesh network (e.g., to a controlling entity, which 55 may be the mesh point 112a functioning as the main AP, another mesh point in the network, or a cloud-based server);
- (3) setting up the configurations of the mesh network, such as service set identifier (SSID), password, and other attributes of mesh network, using Bluetooth, and/or other 60 forms of wireless communication;
- (4) measuring the Internet speed to set a target transmission rate for a desirable wireless coverage in home;
- (5) guiding the installation of mesh points in home to provide the target wireless coverage; and
- (6) providing verification of the target wireless coverage during and/or after the installation of mesh points.

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Note that the type and capabilities of the user's device can include what type of device it is (e.g. Apple iPhone 6S<sup>TM</sup>, Samsung Galaxy S6<sup>TM</sup>, and/or any other related information such as antenna configuration, protocol capabilities, etc.). As is described in more detail below, the device information can be used to determine how to map the coverage range of that particular device to the coverage range of a typical device (e.g., for transmission rate estimation, coverage estimation, roaming decisions, etc.). The information can also be used to translate the measurement results obtained on that particular device to estimated mesh-to-mesh coverage in the wireless mesh network. The information can be used to see if the particular device supports roaming instructions, and if so, what type.

FIG. 2 is an example user interface illustrating a welcome page outlining the general functionalities of a mobile software application that transform the user's mobile device to implement one or more techniques introduced here. As illustrated in FIG. 2, the interface generally outlines the process of assisted installation and configuration of the mesh points, by breaking it down into three segments (not in a necessary order): (1) Installation of the main mesh point (e.g., mesh point 112a); (2) Installation of the additional mesh points (e.g., mesh points 112a-112n); and (3) Testing of the installed mesh points (e.g., mesh points 112a-112n). The interface may include a start button that allows the user to initiate the process.

FIGS. 3A-3F are example user interfaces illustrating processes for assisting a user in installing the main mesh point in a wireless mesh network. As illustrated in FIG. 3A, first, the user is instructed to install and launch an mobile application on his or her user device, such as a smart phone (e.g., device 130a). Upon the execution of the application on the user device 130a, the application prompts the user to install the main mesh point 112a at a desired place in the environment (e.g., next to the home gateway 110). The main mesh point 112a can be connected to the gateway 110 via a wired (e.g., IEEE 802.3 wired Ethernet) or wireless (e.g., IEEE 802.11 WLAN) connection, even though a direct, wired connection is typically more desirable for the inherent robustness and potentially higher transmission rate. In general, the connection between the main mesh point 112a and the gateway 110 should be reasonably close and without substantial interference, such that the main mesh point 112a does not become a bottleneck for the bandwidth to the network 120.

In one or more implementations, after the physical installation of the main mesh point 112a, the application can cause the user device 130a to connect to the main mesh point 112a using a default set of service set identifier (SSID) and password. This connection can be performed by the application automatically (e.g., upon the detection of the availability of the default SSID) or after receiving an input from the user, such as the activation of a software button "I've plugged him in," shown in FIG. 3A. This process of establishing connection to the main mesh point 112a is illustrated in FIG. 3B. There can be a number of variations on the exact mechanism of connecting to the main mesh point 112a, depending on the device type and the operating system of the user device 130a. In one embodiment, if the user device 130a is an Android<sup>TM</sup> device, the application may connect to the default SSID and password by accessing the configuration of the WLAN circuitry on the device. Alternatively, if the user device 130a is an iOS<sup>TM</sup> device for example, the application can instruct the user how to connect to default SSID. In yet another alternative, when available, the application may utilize other types of wireless connection (e.g.,

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Bluetooth<sup>TM</sup>) first for establishing the initial communication and then hand off to WLAN, to make the installation procedure easier. For example, mechanisms such as Generic Attribute Profile (GATT) of Bluetooth Low Energy<sup>TM</sup> (BLE) may be used to exchange the SSID, password, and/or any other relevant profile and user data over a BLE connection to the main mesh point 112a first for purposes of establishing WLAN connection between the user device 130a and the main mesh point 112a. In variations, classic Bluetooth<sup>TM</sup> may also be used to carry profile information when avail- 10

As illustrated in FIG. 3B, the application can also provide an opportunity (e.g., via a button) for the user to convey to the main mesh point 112a a desired SSID and password for the mesh network. If there is a preset SSID conflict situation 15 (e.g., when more than one mesh point is nearby using the same default SSID), the application can detect the conflict and prompt the user to resolve the conflict by entering a customized, desired SSID and password for the mesh network. FIG. 3D illustrates an interface that may be imple- 20 mented in the application introduced here for receiving user selected wireless network credentials for the mesh network, including an SSID and a password. The desired SSID/ password can be used to further configure the first, main mesh point 112a and the subsequent mesh points 112b-112n. 25 When the user device 130a successfully connects to the main mesh point 112a, a screen such as FIG. 3C can be displayed by the application to prompt the user to proceed further with the installation. FIGS. 3E and 3F illustrate additional or alternative embodiments of the user interfaces 30 illustrated in FIGS. 3B and 3C.

After the main mesh point 112a is installed successfully, in some embodiments, the application measures the Internet speed from the main mesh point 11a, and uses that as a basis for a target of how much wireless speed needed to be 35 supported across the entire mesh network. That is to say, the measured Internet speed can be used to determine a target speed rate for the mesh network. According to some examples, the Internet speed may be measured from the main mesh point 112a and then reported to the application 40 using WLAN, Bluetooth, or any other suitable links between the main mesh point 112a and the user device 130a. Alternatively, the Internet speed may be measured by the user device 112a through a connection (e.g., a wireless connection) with the main mesh point 112a, even though the 45 measurement may be less accurate than being measured directly through the main mesh point 112a. Whether the Internet speed is measured from main mesh point 112a or the user's portable device 130a, it may be measured by adopting one or more of the following example ways: flooding-based 50 tools with large multiple Transmission Control Protocol (TCP) sessions; file download time; Probe Gap Model (PGM) tools that send back-to-back probes and estimate the available bandwidth based on the dispersion observed at the receiver; and/or Probe Rate Model (PRM) tools that send 55 probes at different rates. Note that, for PRM tools (e.g., Pathload or ABwProbe), if the probe rate is higher than the available bandwidth, then the probes should be received at a lower rate (e.g., buffering the packets at the bottleneck link). The available bandwidth equals the maximum rate at 60 which the sending rate matches the receiving rate. Also, note that for Internet speed measurement, a server in the Internet is generally necessary to generate the traffic, and therefore practical factors such server's general availability and bandwidth should be considered in the implementation.

FIGS. 4A-4C are example user interfaces illustrating introductory processes for assisting a user in installing

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additional mesh points in the wireless mesh network. FIGS. 4A-4C may be implemented to provide the user with an overview of the automated installation guidance procedure, including dead spot finding, mesh point installation location guiding instructions, and WLAN coverage and connection speed verification after the installation.

FIGS. 5A-5D are example user interfaces illustrating processes for assisting a user in finding weak reception spots (or "dead spots) for potential locations to install additional mesh points.

To begin, the user is prompted to use the user device 112a (and via the application) to conduct a wireless coverage survey. As illustrated in FIG. 5A, the user is instructed to walk around the environment to find dead spots (e.g., all the dead spots or the dead spots that matter to the user) using the application that is installed on the user device 112a. In accordance with the present disclosure, some embodiments of the application can cause the portable user device 130a to give feedback to the user regarding the quality of the wireless coverage of the current location.

More specifically, in accordance with a number of embodiments, the application can utilize one or more of the link rate estimation techniques, which are introduced herein further below, to estimate the wireless coverage of all the frequency bands (e.g., 2.4G, 5G, and/or other bands) using the frequency band (e.g., 2.4G) with which the user device 130a is connected. For example, if the user device 130a is connected to the 2.4 GHz frequency band, the application can use the link rate estimation techniques to estimate the available speed in the 5 GHz frequency band using statistics gathered from the 2.4 GHz connection.

After the link speeds on various frequency bands are estimated, the quality of the wireless coverage at the current location is reported based on the target data rate that wireless mesh network is aimed to reach. The means of the reporting can be designed to be easily understandable by the layman user, such as "Great," "Good," "Bad," or any other user perceivable metric. Examples of such reporting are illustrated in FIGS. 5B-5D. One or more of the user interfaces used for reporting can include buttons to provide the opportunity for the user to upgrade the mesh network's coverage and/or link speed, such as illustrated in FIGS. 5C and 5D. In this way, the application further promotes the business opportunity for the user to purchase more mesh points.

With the knowledge of the locations of the dead spots, the application can guide the user to cover the discovered dead spots one by one.

FIGS. 6A-6E are example user interfaces illustrating further introductory processes for assisting a user in installing additional mesh points in the wireless mesh network. First, as illustrated in FIG. 6A, the application instructs the user to physically carry the first additional mesh point 112b, and then, as shown in FIG. 6B, the application instructs the user to move back to the main mesh point 112a. Now, before the actual guided installation of additional mesh points starts to take place, it may be beneficial to brief the user on the remaining procedures, and acquaint the user with the interface and the possible graphical instructions. Example interfaces in FIGS. 6C-6E introduce to the user the two remaining items to go through: installation of the additional mesh points 112b-112n, and verification of the installation by running tests. A video demonstration of the procedure, such as visually showing the user how he or she should walk away from the main mesh point 112a while holding the user device 130a during the installation of the additional mesh points, can also be helpful. This may be initiated by the user with the example interface shown in FIG. 6C.

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FIGS. 7A-7E are example user interfaces illustrating guiding instructions for assisting a user in installing additional mesh points in the wireless mesh network. After the instruction in FIG. 6B, the user is with the first additional mesh point 112b and at a location nearby the main mesh 5 point 112a. Then, the user is instructed by the application to walk from the main mesh point 112a to a first dead spot. At the first dead spot (or as an alternative, continuously during the walk), the application employs one or more of the link rate estimation techniques introduced hereafter to monitor 10 the wireless coverage, and automatically generate feedbacks to the user with regard to the location where the additional mesh points should be installed. Examples of such feedbacks or advices are: "Too close" (e.g., FIG. 7A), "Close" (e.g., FIG. 7B), "Good" (e.g., FIG. 7C), "A bit far" (e.g., 15 FIG. 7D), and "Too far" (e.g., FIG. 7E). In some embodiments, to maximize the coverage, the user is instructed to install the additional mesh point(s) in the farthest possible place that is still considered "Good," e.g., the closet possible places between "Good" and "A bit far." The user can then 20 install the additional mesh point 112b based on the automated guidance generated by the application.

FIGS. 8A-8G are example user interfaces illustrating diagnostic processes of installed mesh points in the wireless mesh network. Once the additional mesh point (e.g., mesh 25 point 112b) is installed, the application can communicate (e.g., using a default SSID/password) with the additional mesh point 112b and can cause the additional mesh point 112b (e.g., by changing the configuration of the WLAN circuitry, such as switching to an SSID and a password the 30 user previously entered for the wireless mesh network, introduced above) to connect to the main mesh point 112a. It is noted here that the connection between the additional mesh point 112b and the main mesh point 112a is used only as an example for simplicity in describing the entire process. 35 It is not necessary for the additional mesh point 112b to directly connect to the main mesh point 112a, even during the installation and initial configuration process; rather, the installed mesh point can connect to any suitable mesh point in the wireless mesh network. For example, the additional 40 mesh point 112b can connect to another mesh point 112c, which may be already set up to function as a working part of the wireless mesh network. Example screen displays showing the progress of automatic configuring the additional mesh point 112b to connect with the main mesh point 112a 45 are shown in FIGS. 8A-8B.

Then, the application performs a link rate estimation on all possible channels of communication between the installed mesh point 112b and the rest of the mesh network. Such process can be initiated by a software button, as shown 50 in FIG. 8B. For example, a link rate estimation can be performed on a 2.4 GHz link, a 5 GHz link, a sub-1G link, or any other wireless link available. For the embodiments of mesh points that have powerline communication capability (e.g., HomePlug AVTM compatible), the link speed via the 55 powerline can be estimated. In a number of implementations, the mesh points are equipped with more than one types of suitable hardware to implement a variety of network technologies, for example, a 2.4 GHz WLAN, a 5 GHz WLAN, a 2.4G Bluetooth™, a sub-1G radio link, a power- 60 line Ethernet link, and so forth. The variety of network technologies can be used as a pool for selecting the best link for forwarding data traffic and also, in some embodiments, for implementing a dedicated backhaul link (discussed further below). According to one or more embodiments, the 65 quality of link of the mesh point with other parts of the mesh network can be estimated using one or more of the following

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parameters: (1) the speed of communication between the mesh point and the closest mesh point or the mesh point that provides the highest transmission speed; (2) the number of hops in the network; and (3) the target throughput (or goodput) for a client. Link rate estimation techniques, including throughput and goodput determinations, are discussed in more detail below. Based on the link rate estimation, the application can provide corresponding instructions to the user. In some implementations, if the quality of the communication link between the mesh point being installed and the rest of mesh network is determined by the application to be sufficient (e.g., exceeding a select threshold), then the user is instructed to continue, such as shown in FIG. 8E. Otherwise, the application can instruct the user to move the mesh point depending on the result of the link estimation. As shown in FIG. 8C, if the estimated rate is too low, meaning that the mesh point is installed too far away, the application can instruct the user to move the mesh point closer to the nearest mesh point or the main mesh point. Conversely, if the estimated rate is too high, meaning that the mesh point is installed too close by, the application can instruct the user to move the mesh point farther away from the nearest mesh point or the main mesh point, such as shown in FIG. 8D. In one or more implementations, because the total number of hops the user will install may not be known to the system (e.g., by a controlling entity such as the main mesh point 112a) until the installation finishes, the application may place higher priority on maintaining the minimum required throughput in determining where to install additional mesh points. Further fine tuning of the location (e.g., FIGS. 8F and 8G) can be performed, if necessary, after all available mesh points are installed.

Once mesh points are installed successfully, the application can instruct the user to walk to a previously identified dead spot (e.g., discussed above with respect to FIGS. 5A-5D) to verify that the dead spot is mitigated or eliminated after the installation of the mesh points. An example of such an instruction is shown in FIG. 8E. If wireless coverage becomes available at the previously identified dead spot and if the quality of wireless becomes acceptable (e.g., over a certain threshold, such as the Internet speed available at the main mesh point), then the user is instructed to proceed to the next dead spot. If wireless coverage remains unavailable at the dead spot or if the quality is not acceptable, then the user can be instructed to walk back to the location of the last installed, working mesh point and try to install another mesh point toward the dead spot. As previously described, the software application running on the user's mobile device can guide the user in determining the location to install additional mesh points for mitigating or eliminating dead spots by continuously monitoring wireless coverage and estimated good put. A feedback mechanism similar to what is discussed above can be used (e.g., too close, close, good, a bit far, far). This process can continue till there is acceptable wireless coverage at the dead spot.

Once a dead spot is covered, the user is instructed to check the other known dead spots in the environment. As the user walks toward the second or another subsequent dead spot, the application and the mesh network can work together to provide corresponding feedback to the user about a suggested location of for additional mesh point installation. In one or more implementations, the application can utilize those mesh points that are already installed, and take into consideration the possibility of roaming to other existing mesh points when determining the location for the next mesh point. For example, the application can consider or can cause the user's mobile device to roam to another mesh point

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(e.g., the closest one) while the user searches for dead spots. The application may also provide relevant information (e.g., measured readouts) to the controlling entity of the mesh network so as to help the mesh network perform roaming more effectively. More details regarding roaming techniques of are discussed below.

When the user completes the elimination or mitigation of all the known dead spots he or she desires, the user can verify the coverage by performing a survey using the application and the mobile device. An example interface of a survey is shown in FIG. 9. If a faster speed is desired by the user, then the user can instruct the application to provide further guidance regarding the location to install additional mesh points to improve the speed covered in the mesh network, such as shown in FIG. 10.

If anything within the deployed environment changes that results in a change in the wireless coverage, the application can be used to modify the mesh network and/or to install more mesh points. In some examples, the application may 20 include specification of different kinds of mesh point products available, and can guide the user to a recommended kind of mesh point for the user's specific environment (e.g., in view of the existing mesh network and environmental limitations) and need (e.g., to provide the desired speed and 25 coverage). If the Internet speed changes (e.g., as a result of changing Internet service provider (ISP) plans), then the application can be used to adjust the mesh network in order to meet the new targets. FIGS. 11A-11C show example user interfaces illustrating further diagnostic and configuration 30 processes of the wireless mesh network. In the shown examples, the interface allows for the user to view the current link status of each link in the mesh network. The link can be color coded by the detected connection speed. The user can also specify the type of mobile device (e.g., FIG. 11C) such that the information can be used for adjustment and guidance purposes.

Certain embodiments provide the ability to customize the guidance (e.g., how to hold the device during link estima- 40 tion) and/or mesh network functions (e.g., whether to roam the device, how to roam, or what frequency band to connect) based on the type of device that the user has. Specifically, because it is likely that the mobile device is hand-held by the user, how exactly the user holds the device (e.g., the angle 45 the device is held (which affects the antennas' orientation), or the location the device is held as compared to where the antennas are) can affect the wireless performance of the mobile device, which in turn affects the accuracy of the above-discussed measurements. Accordingly, some embodi- 50 ments of the disclosed application may utilize one or more orientation sensors located on the user's mobile device (e.g., gyroscope, accelerometer, compass, gravity sensor, or any other suitable sensor, for obtaining the orientation information of the user device), and use the orientation information 55 as a parameter to adjust how the application maps the measured wireless performance to the wireless coverage at the location where the mobile device is held. In some examples, the application can guide the user on how to hold the mobile device (e.g., to hold at a preferred angle, or to 60 stay away from certain reception sensitive portion of the particular device) in order to get consistent survey results. In a number of embodiments, the orientation and/or other sensory information may also be used to estimate which direction the user is walking toward, which in turn can assist 65 the application in determining the guidance instruction used during the installation process.

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Link Rate Estimation in a Wireless Mesh Network

The disclosed embodiments can utilize, through a software application, the user's mobile device to perform automated mesh network installation guidance. To facilitate the guidance, embodiments of the software application is to perform quality estimation of link between mesh points in order to determine whether a particular mesh point's installed location is a good one, to check and verify wireless network coverage, and to check for the throughput of the Internet at various locations in the environment. As one example scenario, during a mesh network installation or configuration process, the user can be provided with opportunities (e.g., illustrated in FIGS. 5A-5D) to find the dead spots using the mobile device. As such, the user's mobile device is associated to the closest mesh point to the dead spot. Then, the user is instructed to walk toward the dead spot while holding the user device, and the software application would continuously perform link estimation in order to suggest a location for installing additional mesh point(s). In another example scenario (e.g., after mitigating a dead spot), the user may be instructed to walk back to the first mesh point (e.g., FIG. 6B) and then walk to new dead spot. (In this case, the user device may be roamed to another mesh point that provides a better throughput while the user is relocating; roaming techniques are discussed below.) In these examples, while the user is relocating (e.g., walking), the wireless link quality can be continuously assessed such that a proper location can be suggested for new mesh point installment.

Further, once the new mesh point is installed, that new mesh point can send test packets to the mesh nodes that it can reach. Based on the results measured by the test packet transmission, the new mesh point can select one or more methods as its dedicated backhaul communication mechanism between itself and the rest of the mesh points in the mesh network. Dedicated backhaul communication techniques are discussed further below. In a number of the above mentioned scenarios, there is a need to have link estimation techniques for accurately estimating the link between mesh redes.

However, it is observed in the present disclosure that a number of difficulties prevent traditional metrics from working well in the disclosed wireless mesh network environment. For example, because some portion of the estimation procedure is performed on the user's device, different types of phones (e.g., Apple, Samsung, or HTC), antenna configurations (e.g., 1×1, 2×2), as well as the WLAN technology supported (e.g., IEEE 802.11n, or 802.11ac) can all affect the measurement results. (FIG. 12 shows an example list of type of devices.) Another consideration is the size of the test packets. For example, it is observed that traditional "ping" packets would not be adequate. "Ping" is a computer network administration software utility used to test the reachability of a host on an Internet Protocol (IP) network. It measures the round-trip time for messages sent from the originating host to a destination computer that are echoed back to the source. Ping typically operates by sending Internet Control Message Protocol (ICMP) Echo Request packets to the target host and waiting for an ICMP Echo Reply. The program may report errors, packet loss, and a statistical summary of the results, typically including the minimum, maximum, the mean round-trip times, and/or standard deviation of the mean. However, because ping packets are typically very short, and the estimated rate based on such packets would not represent the actual throughput and Internet speed capability, and therefore they are not a good measure for setting the target transmission rate. Other

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example considerations include, but not limited to, frequency of the transmission of test packets, type of test packets, and so forth. For example, the test packets should not be of a type of packets (e.g., control packets) that are to be transmitted at a lower rate by the design of rate controlling mechanism in the communications protocol.

Accordingly, the software application as well as the mesh point disclosed herein can initiate a specific test data traffic to be sent between the user's mobile device and the mesh point with which the user's mobile device is currently 10 associated. In many examples, the data traffic is mainly downlink data traffic from the mesh point to the user's mobile device; however, uplink data traffic can be estimated via the same or a similar manner. Then, the data rate as well as the received signal strength indicator (RSSI) (a measure- 15 ment of the power present in a received radio signal) between the user's device and the mesh point can be used to estimate the quality of wireless mesh network's coverage at different locations. Depending on the implementation, the link estimation calculations can be done in the software 20 application running on the user's mobile device, or alternatively, on a software or firmware operating on the mesh point. The software application can provide user interfaces (e.g., FIGS. 11A-11C) for monitoring the status of the links based on the estimated wireless coverage. This process can 25 be performed as necessary, for example, when the network's configuration changes (e.g., Internet speed upgrade, new mesh points, or environmental changes such as a new microwave oven or a new piece of furniture).

With simultaneous reference to flow charts 2000, 2030, 30 and 2050 illustrated in FIGS. 20A-200, example methods for performing rate estimation, device characterization, and device classification in a mesh network are further discussed below. These methods can be implemented and performed by a controlling entity of the mesh network in conjunction 35 with the software application that runs on the user device (e.g., device 130a) and the mesh points. Depending on the embodiments, the controlling entity may be centralized (e.g., on the main mesh point 112a, FIG. 1A), distributed among the mesh points (e.g., on mesh points 112a-112n, FIG. 1A), 40 and/or remotely controllable (e.g., via a remote server that is in the WAN IP Network 120).

More specifically, to perform the link rate estimation (e.g., for finding a suitable location to install an additional mesh point, in order to mitigate a dead spot), first the software 45 application can send an instruction to the currently associated mesh point (which, in a number of implementations, would be the mesh point with the best link to the user's device based on the disclosed techniques) to start transmitting specific downlink test data packets to the user's mobile 50 device (Step 2002). According to one or more embodiments, the packets are aggregated, such as Aggregated Mac Protocol Data Unit (A-MPDU) or Aggregated Mac Service Data Unit (A-MSDU) introduced in the IEEE 802.11 family of standards. In some embodiments, at least 10 data units are 55 aggregated in the aggregated data packet (e.g., at least 10 MPDU per A-MPDU). One or more implementations provide that each MPDU is about 100K bytes, and the A-MPDU is at least 1M bytes. In some examples, tests can be performed on multiple available frequency bands (2.4 GHz, 60 5 GHz, or others) and/or different channels. The testing packets can be sent at an increasing rate, for example, 20 times a second, 30 times a second, and so forth, in order to test the capability. Each rate should at least be sustained long enough for the rate control of IEEE 802.11 protocol to 65 converge or stabilize. FIG. 12A is a table illustrating the upper, center, and lower frequencies of different Wireless

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LAN (WLAN) channels in a typical 2.4 GHz frequency band, and FIG. 12B is a table illustrating example frequencies of different Wireless LAN (WLAN) channels available (e.g., in the United States) in a typical 5 GHz frequency band.

The mesh point can verify that the transmission of the aggregated packets are acknowledged ("ACKED"). Depending on the traffic's direction, either the mesh point or the user's device can determine the RSSI values for the last select number of packets are determined (e.g., allowing for rate controlling mechanism in Wi-Fi protocols to converge) (Step 2004). The RSSI values can be filtered to exclude momentary fluctuation (e.g., which may be a result of multi-path fading) does not negatively affect the accuracy of the estimation. In some embodiments, if the user's device is equipped with multiple antennas, MIMO RSSI values are taken into account. If the RSSI value is calibrated, then RSSI calibration can be used to offset the readings. In addition or as an alternative, if thermal compensation coefficients are available, then the RSSI value can be offset to accommodate thermal changes in radio receiver's gain. In some examples, power per rate can also be taken into account to accommodate different power consumptions for different rates, and the RSSI readings can be offset accordingly. In some examples, a Clear Channel Assessment (CCA) can be performed to estimate how much interference is there in the communication channel, and if the interference exceeds a certain level, the link estimation can switch to an alternative approach, for example, by using only RSSI estimations. In other examples, this interference determination step may be entirely skipped.

The estimation of the throughput (or effective link rate) can be based on the physical layer (PHY) data rate observed in the transmission of the test packets. Because the link is bidirectional, the measurements for the transmission part (from mesh point to user device) is separate from the measurements for the reception part. For measuring transmission performance, after the mesh point downloading test packets to the user's device, the transmission (TX) PHY rate is read back from the user's device for the last select number of packets (for the transmission is typically more unstable when initialized). Even though the specific implementation may differ depending on the application, one or more factors including the transmit data rate, coding, and/or bandwidth of the packet can be used in at least some embodiments to estimate the PHY rate. According to some embodiments, the amount of ACKs and other packets can be taken into account, and in some embodiments, may be filtered out of process that is used to calculate the average PHY rate. Other factors such as packet length and packet error rate may also be taken into account. In some embodiments, if the detected interference is too high, the estimated rate may be offset such that the software would not mistakenly determine that the location has become too far when the real reason for the estimated rate to be low is because of collision and noise. Measuring reception performance can be done in a similar fashion as the transmission, for example, by the user's device uploading test packets to the mesh points, which can determine the reception (RX) PHY rate.

With the measured PHY rate, a network throughput (TPUT) of the mesh network, having the additional mesh point installed at the location where the user's device is currently located, can be estimated (Step 2006). For purposes of discussion herein, the TPUT can be defined as the Transmission Control Protocol (TCP) layer TPUT that the client (e.g., the user's device) can pass through the newly installed mesh point (and through the mesh network) to the

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home gateway. In a number of implementations, the TPUT of the mesh network can be expressed as follows:

$$\frac{1}{TPUT} = \frac{\text{Eq. (1)} \quad 5}{TCP_{Overhead} \sum_{i=1}^{N_{hop}} \left(\frac{1}{LTPUT_i} + \frac{1}{\text{USER DEVICE WIFI PHY Rate}}\right)}$$

where LTPUT $_i$  is the TPUT on the link $_i$ , which is the TPUT between two mesh points. The TPUT between two mesh points are calculated using test packets after the installation of the two mesh points. The TPUT measured can be frequency band specific, and in which case, the TPUT number used here should correspond to the frequency band that the user's device is currently measuring or adopting. Based on experiments, TCP $_{overhead}$  value can be set to 0.1. In one or more embodiments, the LTPUT=0.7×EstimatedPHYRate $_i$ . The mesh network's Internet  $_{speed}$ =Min (TPUT, speed $_m$ ), where speed $_m$  is the Internet speed measured at the main mesh point that directly connects to the gateway, which in turn connects to the Internet.

Note that, in order to implement mapping of measured 25 above. TPUT performance (through the user's device) to the performance of the additional mesh point, different types of devices are tested in a controlled environment, and compared with mesh point's performance in the same controlled environment. Flow chart 2030 shows an example method for 30 characterization of device type and collection of training data. For example, TPUT as well as other statistical data for different devices can be collected at various attenuation (Step 2032) by causing the device to engage in data traffic with a certain amount of packets (Step 2034). Measurements can be taken on both transmitting and receiving ends, and on all the available frequency bands (e.g., 2.4G and 5G). The measurement on the data transmitted to the device can generate RSSI values and RX rate for the device under the specific attenuation (Step 2036). The measurement on the 40 data received from the device can generate TX rate and TX retry numbers for the device under the specific attenuation (Step 2038). The same procedure is performed at same attenuation points, and data collected, for a mesh point on the available frequency bands. Data can be statistically 45 processed and analyzed (e.g., curve fitting) to find effective attenuation (Step 2040). Known statistical techniques, such as multi-variable linear regression, polynomial regression, or spline) may be used.

With the already gathered statistical data (e.g., TPUT 50 versus Attenuation), therefore, the disclosed link rate estimation technique is able to map the performance of a user's device to the anticipated performance of a mesh point in a particular frequency band (Step 2042). In a similar fashion, it is also possible to map the performance of the user's 55 device in one frequency band to the anticipated performance of the same device in another frequency band (Step 2042). Note that, because each type of user device may have a different wireless performance characteristics (e.g., when and how to drop connection in what frequency band), 60 persons who implement the technique may need to use a testing procedure suitable to the type of device for gathering sufficient statistical data that can enable a meaningful mapping. A controlled environment can be used to perform tests on major device vendors and major device types to create 65 enough statistical data to create a meaningful database for mapping purposes. For example, handsets, tablets and per18

sonal computers from each of select major device vendors can be tested to gather their wireless performance (e.g., TPUT) under different attenuation configurations.

FIG. 13A is a table illustrating the upper, center, and lower frequencies of different Wireless LAN channels in a typical 2.4 GHz frequency band. FIG. 13B is a table illustrating example frequencies of different Wireless LAN (WLAN) channels available (e.g., in the United States) in a typical 5 GHz frequency band. As illustrated in FIG. 13A, in the United States and Canada, there are 11 channels available for use in the 2.4 GHz Wireless LAN frequency band as defined by IEEE 802.11 family of standards.

FIG. 14A-14C are different statistical data gathered for mapping the performance of a particular type of device to the anticipated performance of an additional mesh point, if installed at the same location. In particular, the example device is an Apple iPhone 6, which is an IEEE 802.11ac device with a 1×1 antenna setup. In this particular example, because it is observed that the device operating in 5 GHz may disconnect more easily than what would have been for a mesh point, 2.4 GHz frequency is used to check for wireless coverage during the network installation. This is an example of the customization of testing procedure discussed above.

In some implementations, a Probe Request (i.e., a special type of 802.11 packet) can be used to detect the type of the user's device. When suitable (e.g., when the device may disconnect at 5 GHz more easily than a mesh point), the software application and/or a daemon (i.e., a computer program that runs as a background process) operating on the mesh point can direct the user device to use only a certain frequency band (e.g., 2.4 GHz) during installation (e.g., by using Probe Suppression or other applicable methods). In some embodiments, the software application operating on the user's device can communicate with the mesh point (e.g., to a daemon running on the mesh point) about the exact device type. Additionally, if the device type is unknown or a type that is not documented in the database, then a generic device type may be used. The generic device type can have a profile that is the average of devices of the same configuration (e.g., 802.11ac, 1×1). Additionally or alternatively, flow chart 2050 shows a method that can be utilized for device classification. The method can be performed, for example, at device association in order to find a device equivalent in the database of training data. Device wireless capability (e.g., available network technology or antenna configuration) can be first discovered, as well as the device's manufacturer information and operating system (OS) version information (Step 2052). Then, the closest device type from training can be matched based on the gathered information (Step 2054). Besides manufacturer and OS information, the number of hops between the associating mesh point and the home gateway can be used to map to a corresponding attenuation data point in the training data. In this manner, using the database of training data, a classified device type can be decided (Step 2056).

With the above discussion in mind, the link rate between a potential mesh point and its closest (or otherwise best performed) existing mesh point can be estimated based on RSSI values and PHY rates, derived from the test packet measurements between the user's device and the existing mesh point. Continuing with the above iPhone 6 example, based on the experiment results, the following pseudo code can be used for estimating TPUT for a mesh point's performance at 5 GHz using RSSI and PHY rates measured at the user's device at 2.4 GHz.

If 2.4G Rate ≥ 72Mbps or If 2.4G Rate < 26Mbps {

If RSSI < -60 and If 2.4G Rate ≥ 70Mbps, then

report TPUT for Link-Orbi-5G = 175.5Mbps;

Estimated Rate = 22.353 \* (RSSI + 77) + 88;

report TPUT for Link-Orbi-5G = 26Mbps;

report TPUT for Link-Orbi-5G = 1Mbps;

Estimated Rate = 3.24 \* (2.4G Rate - 26) + 27 round up Estimated Rate to the closest 5G PHY rate;

report TPUT for Link-Orbi-5G = closest MCS rate;

If 2.4G max of RSSI of antenna ≥ -60

-77 ≤ RSSI < -60 {

If  $-85 \le RSSI \le -77$ , then

If 26Mbps ≤ 2.4G Rate < 72Mbps {

If RSSI  $\leq$  -85, then

Estimated Rate);

<End>

<Start>

175.5Mbps;

468Mbps;

```
If 2.4G Rate < 70Mbps, then report TPUT for Link-Orbi-5G =
    If 2.4G Rate ≥ 70Mbps, then report TPUT for Link-Orbi-5G =
    round Estimated Rate to the closest Modulation and Coding
report TPUT for Link-Orbi-5G = Max(Estimated Rate, RSSI
```

Note that the above pseudo code is merely an example measured for Apple iPhone 6. As mentioned above, different type of devices may have different character profile, and therefore the parameters and/or logic flow in the pseudo code should be adjusted according to the type of device that is used. The following is another example pseudo code for estimating TPUT for a mesh point's performance at 2.4 GHz using RSSI and PHY rates measured at the user's device at 2.4 GHz.

```
<Start>
If 2.4G Rate ≥ 72Mbps or If 2.4G Rate < 26Mbps {
    If 2.4G max of RSSI of antenna ≥ -70, then
         report TPUT for Link-Orbi-2G = 144Mbps;
    If -84 < RSSI < -70 {
         Estimated Rate = 6 * (RSSI + 84) + 52;
         round Estimated Rate to the closest MCS rate:
         report TPUT for Link-Orbi-2G = closest MCS rate;
    If -90 < RSSI < -84, then
         report TPUT for Link-Orbi-2G = 19Mbps;
    If RSSI \leq -85, then
         report TPUT for Link-Orbi-2G = 1Mbps;
If 26Mbps ≤ 2.4G Rate < 72Mbps {
    Estimated Rate = 1.72* (2.4G Rate - 19) + 39;
    round up Estimated Rate to the closest 2.4G PHY rate;
    report TPUT for Link-Orbi-2G = Max(Estimated Rate, RSSI
Estimated Rate);
<End>
```

The following is yet another example pseudo code for estimating the performance of the user's device at 5 GHz using RSSI and PHY rates measured at the user's device at 2.4 GHz.

```
If 2.4G max of RSSI of antenna ≥ -50 {
    If 2.4G Rate < 70Mbps, then report TPUT for iPhone-6-5G =
    If 2.4G Rate ≥ 70Mbps, then report TPUT for iPhone-6-5G =
```

20 -continued

```
If RSSI < -50 and If 2.4G Rate ≥ 70Mbps, then
             report TPUT for iPhone-6-5G = 175Mbps;
        If -69 \le RSSI < -50 {
             Estimated Rate = 13.84 * (RSSI + 69) + 88;
             round Estimated Rate to the closest 1x1 11ac PHY rate;
             report TPUT for iPhone-6-5G = the closest 1x1 11ac PHY rate;
        If RSSI ≤ -69, then
             report TPUT for iPhone-6-5G = iPhone-6-2G (i.e., use the 2.4G
10
    averaged rate and map it to the closest 2.4G MCS rate);
    <End>
```

FIGS. 15A-15D are example tables of closest PHY rates 15 that can be used for throughput estimation in the above pseudo codes.

FIG. 16 is an example table for mapping between estimated link rate (throughput) and user instruction, for a mesh point operating in a particular frequency band. Specifically, with the results from the above TPUT estimation techniques, the software application running on the user's device together with existing mesh points can provide automated guidance to the user with regard to the location of installing the additional mesh point. Shown in FIG. 16 is an example for guiding a user with Apple iPhone 6 for installing a mesh point that is to operate in the 5 GHz frequency band. The example table may be used to generate instructions in the user interfaces shown in FIGS. 7A-7E.

FIG. 17A is an example table for mapping between estimated link rate (throughput) and wireless network coverage, and FIG. 17B is an alternative example that implements a hysteresis mechanism for mapping between estimated link rate and wireless network coverage. The tristate mechanism illustrated in FIG. 17B is merely an example, as more or fewer states may be used. Specifically, with the results from the above TPUT estimation techniques, the software application running on the user's device together with existing mesh points can also provide wireless network coverage survey to discover dead spots or to verify the mitigation thereof. The examples in FIGS. 17A-17B may be used to generate instructions in the user interfaces shown in FIGS. 5A-5D.

Roaming in a Wireless Mesh Network

Traditionally, wireless network clients (e.g., user devices 130a-130n) only start roaming when the measured RSSI value drops below a predetermined threshold. This mechanism can be ineffective in some scenarios, for example, when the link to the Internet is not functional, and yet the 50 client does not roam to another nearby access point that has a functional link. In addition, the RSSI value of access point measured by the client is not a good estimation of the quality of the wireless link as the link is typically asymmetric (e.g., because the transmission power of an access point is usually higher than the client's transmission power).

Accordingly, the disclosed wireless mesh network can measure one or more parameters in addition to the RSSI value to better determine when and how to roam a client. Some examples of the parameters include: the data rate being currently used, packet aggregate size, packet error rate (PER), retry count, available airtime, and delay on the link. With simultaneous reference to flow chart 2100 illustrated in FIG. 21, an example method for performing roaming decision in a mesh network are further discussed below. The method can be implemented and performed by a controlling entity of the mesh network in conjunction with the software application that runs on the user device (e.g., device 130a)

and the mesh points. Depending on the embodiments, the controlling entity may be centralized (e.g., on the main mesh point 112a, FIG. 1A), distributed among the mesh points (e.g., on mesh points 112a-112n, FIG. 1A), and/or remotely controllable (e.g., via a remote server that is in the WAN IP 5 Network 120).

Specifically, in one or more implementations, when a particular client is associated with a certain mesh point, other mesh points can also measure the RSSI value, TX data rate, and PER from the particular client (Step 2102). 10 Depending on the embodiment, the decision flow for measuring these values can be performed in a simultaneous or a staggered fashion. For example, in some embodiments, the RSSI value, TX data rate, and PER can be measured together simultaneously to collectively determine wither to trigger 15 the next step. In some other embodiments, one of the values (e.g., RSSI) can be first measured against a certain threshold, then another value is compared another threshold, and so forth, until all of the values are compared and together determine that the next step should be proceeded. In addition 20 or as an alternative to comparing all the values, some implementation can compare only a select number of values or give weight to a certain value in determining whether to proceed to the next step.

A number of embodiments can determine when roaming 25 is to take place based on information gathered from both the mesh point that the client is currently associated with and the mesh point(s) that the client is not currently associated with. Roaming of the particular client to another mesh point can take place, for example, when the existing link quality is 30 deemed insufficient and it is estimated that there exist a better link for the client to connect (Step 2104). To avoid roaming too frequently and potentially wasting excessive resource on taking measurements, a timer mechanism can be implemented (Step 2106), such that only when a link quality 35 problem persists then is the next step in the roaming mechanism triggered. The better link may be a different mesh point, or it may be a different band on same mesh point. Because it is observed that a single sample of RSSI value may not be an accurate measurement (e.g., because of 40 multi-path fading), one or more embodiments are to average RSSI values over packets. Some embodiments can also detect the Modulation and Coding Scheme (MCS) of the packet to determine what offset value may have been used.

In some examples, similar to what is described above 45 regarding link rate estimation, different mapping can be formulated from client statistics (e.g., RSSI value, PHY rate, etc.) on the frequency band of use in order to estimate what the anticipated RSSI would be on another frequency band to which client may connect, and/or on another mesh point to 50 which the client may be able to connect. In certain embodiments, a mapping can be stored (e.g., at each mesh point) in the mesh network. The mapping can be used for mapping the data measured from the client to an estimated PHY link quality.

If the link quality problem persists, the mesh network starts to compile a list of potential roaming candidates by starting to monitor the quality of potential links from other mesh points (Step 2108). The list of candidate is calculated based on PHY parameters, such as data rate, RSSI value, 60 etc., and the list can be used to determine the best candidate for roaming clients. For example, similar to the rate estimation techniques described above, test packets can be sent (Step 2110), and a potential link rate may be determined (e.g., by uplink RSSI and/or other parameters observed on 65 other mesh points in proximity) (Step 2112). Depending on the embodiment, the list can be maintained by the control-

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ling entity, which may be scattered among the mesh points (e.g., in a decentralized fashion) or can be centralized (e.g., in the main mesh point). Example of the parameters that may be taken into account for deciding the best roaming candidate include: a list of clients of each candidate already associated with and how much aggregate traffic is between each candidate and its clients; the type of traffic supported by the candidate (e.g., voice, video, data, etc.); the interference and noise level surrounding the candidate; and the type of traffic that the client who may roam uses.

If there is a suitable candidate (Step 2114), for example, when the potential link to the candidate is better than the current link by a certain degree (e.g., X dB), then the roaming takes place (Step 2118). Otherwise, another timer mechanism can be implemented (Step 2116) before the roaming decision flow chart can be run again, such that the system can avoid perform roaming at an unnecessarily high frequency. When roaming takes place, depending on the type of roaming method used, there may be a period of down time during which the WLAN connection is unavailable. Therefore, certain embodiments disclosed herein can measure and keep record of this period of down time, and take into account this roaming overhead in future roaming decision (e.g., for the particular client or for the particular type of client). In some examples, a table or a database that records a default roaming time for each type of commonly seen devices can be utilized. Additionally, depending on the time and type of roaming, the execution of a decision to roam a client can be delayed if the client has ongoing data traffic that is delay sensitive (e.g., if a minimum level of QoS is active for the type of data traffic). Moreover, if the roaming down time exceeds a certain threshold, the mesh network may choose to utilize a time during which the client is inactive for roaming.

The mesh network (e.g., the controlling entity thereof) can cause roaming of a client in several ways. If the client does not support intelligent roaming commands (e.g., those described in IEEE 802.11v and 802.11r), the mesh network can force the client to roam by disconnecting the client (e.g., with Deauthentication and/or Disassociation management frames). The mesh network may determine the client type and may provide a disconnect reason to the client. However, generally speaking, disconnecting a client is undesirable because after disconnection, it is uncertain whether the client would try to reconnect back to the network. In some embodiments, if the disconnected client attempts to connect back to the mesh point or the frequency band that the controlling entity determines to be less desirable, the controlling entity can cause the mesh network not respond to the association request. Additionally or alternatively, the controlling entity may keep a timer for the client, such that in the case that the disconnected client keeps requesting to connect to an inferior mesh node or frequency band, the mesh network may eventually allow the client to connect 55 after the timer expires, so as not to leave the client with no connection at all.

If the client supports intelligent roaming commands, then the mesh network can use roaming commands to enable pre-roaming client measurement, and can use such kind of commands to communication with the client to suggest the roaming. However, it is recognized in the present disclosure that the support of these intelligent roaming commands may be client implementation dependent and not universal, sometimes even when the client advertises the capability to support such commands. Therefore, the controlling mechanism disclosed herein can not only discover which clients have the capability for intelligent roaming commands (e.g.,

during the association process), but also learn over time which ones of these client devices are behaving as anticipated and which ones are not, so that the mesh network in performing roaming can adapt to a particular client's behavior

More specifically, one or more embodiments of the mesh network can learn over time how different clients behave and can adjust its roaming instruction and behavior accordingly. Depending on the implementation, this historical data can be maintained based on the client's MAC address, association 10 identifier (AID), or any other unique identifier. The decision regarding when to roam a particular client may depend on the client's observed behavior. For example, if the client in the past has a history of not following the anticipated roaming behavior responsive to a roaming command, then 15 the mesh network can decide to only roam the particular client when there is a substantial performance drop (e.g., below a more significant threshold than a regular, roamingfriendly client) and similarly, in some embodiments, the mesh network can choose not to roam the particular client 20 even if the client can receive a better WLAN link performance with another mesh point or another band on same mesh point. Similar to described above, roaming decision may depend on the traffic type or the dominant traffic type of a specific client. Additionally or alternatively, roaming 25 decision may depend on the roaming delay that a particular client has in moving from one mesh point to another mesh point, or from one frequency band to another frequency band on same mesh point. The mesh network is able to learn over time which roaming mechanism (e.g., IEEE 802.11v/k/r 30 behaviors) works the best for each client based on how the client has roamed earlier. In addition to mitigating the aforementioned disconnection issue, the benefit of intelligent roaming includes, for example, faster channel scanning, higher efficiency in WLAN "air time" (since fewer probe 35 requests and probe responses are needed, there is more bandwidth for the rest of the network; and reduced client power consumption (since fewer active scans are needed).

In a number of implementations, the mesh network's roaming commands support the BSS Transition Manage- 40 ment (BTM) for network assisted roaming, described in IEEE 802.11v standards for wireless network management. In general, BTM allows steering the client seamlessly even when there is ongoing traffic. One or more embodiments of the mesh network can use the following packets for roam- 45 If a client has roamed recently { ing: BSS Transition Management Request (AP to client); BSS Transition Management Response (Client to AP); and BSS Transition Management Query (Client to AP). Specifically, the BSS Transition Management Request can be used when the AP (e.g., a mesh point) offers advice to the client. 50 This can include a list of the APs (e.g., other mesh points) to which the client can consider associate (e.g., "Neighbor Report" information). The BSS Transition Management Response can be used for the client to accept or reject, and the client can also include a reason code for the acceptance 55 or rejection.

The mesh network can also perform WLAN radio measurements, as described in IEEE 802.11k standards. Functions include the generation and dissemination of a Link Measurement report (i.e., for a client or an AP to query the 60 other side for the quality of the link), as well as a Neighbor Report (i.e., information about neighboring APs that are known candidates to which the client can consider roaming). Other IEEE 802.11k measurements supported include, for example, Beacon, Channel Load, Noise Histogram, STA 65 Statistics, Location Configuration Information, Transmit Stream/Category Measurement, and Frame.

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The mesh network can also perform fast BSS transition, as described in IEEE 802.11r standards. Without IEEE 802.11r, a mobile device client may need to go through reauthentication after reassociating. With IEEE 802.11r, the mesh network can reestablish existing security and/or QoS parameters prior to reassociating a client to a new mesh point. This technique is especially useful for real time interactive services (e.g., voice and video communications). This can also reduce the time that connectivity is interrupted between a mobile client and WLAN infrastructure when that mobile client is connecting to a new mesh point. Reauthentication time are also saved, which is especially prominent in a strongly secure WLAN (e.g., in an enterprise environment where 802.1x and EAP methods for authentication are used).

With the above introduced roaming techniques in mind, the following are pseudo codes for roaming decisions. Similarly, these pseudo codes should be customized for a specific application. For example, in one or more embodiments, these pseudo codes may have different parameters for a different combination of a specific network technology (e.g., IEEE 802.11n, 802.11ac) and antenna configuration (e.g., 1×1, 2×2, 3×3). The following example are pseudo codes for a force roaming decision for a device (e.g., Apple iPhone 6) with an IEEE 802.11ac with a 1×1 antenna configuration, operating in 5 GHz frequency band. Note that a "force roaming" is where the mesh network actively sends instructions to the client or otherwise cause the client to roam (which, in some instances, may cause a connection loss).

```
<Start>
Force Roaming Decision {
If a client has not roamed recently (e.g., the past 60 seconds) {
    If one of the following happens:
         (If 5G max of RSSI of antenna ≤ -80) or
         (If PHY Rate < 58) or
         (If Path Rate < 10Mbps)
    start roaming;
    once roaming decision happens, send 20 ARP packets;
    If there are not 20 packets in the past three seconds, then
         average over all new packets in past three seconds;
         average RSSI values on last 20 packets from monitor mode;
    If one of the following happens:
          (If 5G max of RSSI of antenna ≤ -84) or
         (If PHY Rate < 10) or
         (If Path Rate <2Mbps)
    start roaming;
<End>
```

As shown in the above pseudo code, once a decision to roam a client has started, the RSSI values are observed by neighboring mesh points for candidate selection. Then, the following pseudo code can be used to estimate PHY rate based on the RSSI measured.

```
Start>
If RSSI > -65, then
    report Path Rate Target = 351Mbps;
If -65 < RSSI < -80 {
    Estimated Rate = 10.29 * (RSSI + 80) + 117;
    report Path Rate Target = map Estimated Rate to the closet 80MHz
    rate;
}</pre>
```

25
-continued

26
-continued

```
If -80 < RSSI < -85, then
report Path Rate Target = 58Mbps;
If RSSI < -80, then
report Path Rate Target = 1Mbps;
<End>
```

Now, with the path rate of the target candidates estimated, the mesh network decides whether to roam the client to a target candidate, and if so, which one. An example pseudo code for such is provided as follows.

```
<Start>
If RSSI_Original > -70 {
     If Path Rate original larger than 10, then
         roam if path rate target is larger than path_rate_original +30
and RSSI is larger than -75;
     If Path Rate original smaller than 10, then
         only roam if path rate target is larger than
20+path_rate_original and RSSI is larger than -80;
     otherwise.
          do not roam:
if -70 < RSSI_Original < -80 {
     If RSSI_Target > -80, then
          If Path_rate_target>Path_Rate_original+10, then
     If RSSI_Target < -80 {
         If Path rate_original > 5Mbps, then
              do not roam;
          If Path rate_original < 5Mbps {
              If RSSI_Target <-85, then
                   do not roam; else,
                   roam if Path rate target is larger than 10+path rate
original;
If RSSI_Original < -80 {
     If RSSI Target > -75, then
         roam to the target with highest path rate, if destination path rate
is higher than 5Mbps;
     If -75 > RSSI Target > -80, then
         roam to the target with highest path rate, if destination path rate
is higher than 10Mbps;
     If -85< RSSI Target <- 80, then
         roam to the target with highest path rate, if destination path rate
is higher than 20+current_path_rate;
     If RSSI Target < -85, then
          do not roam:
<End>
```

Similarly, continuing with the example device, IEEE 802.11ac with a 1×1 antenna configuration, operating in 5 GHz frequency band, the following example are pseudo codes for a soft force roaming decision for the same device. Note that a "soft roaming" is where the mesh network passively opens a roaming window to the client that allows the client to use available information to roam to a stronger access point.

```
<Start>
Soft Roaming Decision {
If a client has not roamed recently (e.g., the past 60 seconds) {
If one of the following happens:
    (If 5G max of RSSI of antenna ≤ -75) or
    (If PHY Rate < 117) or
    (If Path Rate < 20Mbps)
start checking on opening up;
once opening up decision happens, send 20 ARP packets;
    // In some embodiments, a limitation is placed on the frequency
of
```

```
// this taking place (e.g., can be only once every 60 seconds)
// Further, if a roaming window is open and the client does not
// send a probe request, this time can be increased from 60 to
// 180, and can be kept at 180 until the client sends a probe
// request or any other request if with this condition is triggered.

If there are not 20 packets in the past three seconds, then
average over all new packets in past three seconds;
otherwise,
average RSSI values on last 20 packets from monitor mode;

10 }
End>
```

The pseudo code for decision on opening up the roaming window is provided herein as follows.

```
<Start>
    If RSSI_Original > -70 {
        If Path Rate original larger than 20, then
             open up roaming window if path rate target is larger than
    path_rate_original +20 and RSSI is larger than -75;
        If Path Rate original smaller than 20, then
             open up roaming window to the best path rate if the best path
    rate is higher than max(10+current path rate, 20);
        otherwise,
             do not open up roaming window;
25
    if -75 < RSSI_Original < -80 
        If RSSI_Target > -75, then
             If Path_rate_target > 20, then
                  open up roaming window;
             If -75 > RSSI\_Target > -80, then
                  If Path_rate_target > Path_Rate_original+10, then
30
                      open up roaming window;
             If RSSI_Target < -80 {
                  If Path rate_original > 5Mbps, then
                      do not open up roaming window;
                  If Path rate_original < 5Mbps {
                      If RSSI_Target <- 85, then
35
                           do not open up roaming window;
                      otherwise,
                           open up roaming window;
    If RSSI_Original < -80 {
        If RSSI Target > -80, then
             open up roaming window if destination path rate is higher than
    10Mbps;
        If RSSI Target < -80, then
             do not open up roaming window;
45
    <End>
```

FIGS. 18A-18B are a list of known user devices with their capabilities to follow or otherwise coordinate with the mesh network in performing intelligent roaming. As shown in FIG. 18A, all newer iOS devices are advertised to support all three 802.11k, 802.11r, and 802.11v Wi-Fi network standards. As shown in FIG. 18B, some later version of Android devices do support intelligent roaming, but some older version devices may only support 802.11r and 802.11k, but not BTM. Different capabilities of the devices should be factored in when adjusting the parameters in the pseudo codes.

O Dedicated Backhaul Link and Fault Tolerance

FIG. 19 illustrate an example diagram showing a backhaul link established between two mesh points (e.g., in the mesh network). Besides regular WLAN services (e.g., data packet forwarding to and from the gateway and the Internet) that are provided by the mesh network to client devices, in a number of implementations, the mesh points themselves in the mesh network can utilize one or more telecommunica-

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tion circuits to form one or more dedicated backhaul links among the mesh points. In some examples, such backhaul links may be used to perform control and management functions, for example, the controlling entity to instruct a mesh point to execute a roaming decision for a client. In addition or as an alternative, such backhaul links can be utilized to provide more throughput, and/or to provide fault tolerance to the mesh network (e.g., to provide redundancy against temporary interference, etc.). With simultaneous reference to flow charts 2200, 2230, and 2250 illustrated in 10 FIGS. 22A-22C, example methods for performing switching and selection of dedicated backhaul in a mesh network are further discussed below. These methods can be implemented and performed by a controlling entity of the mesh network in conjunction with the software application that runs on the 15 user device (e.g., device 130a) and the mesh points. Depending on the embodiments, the controlling entity may be centralized (e.g., on the main mesh point 112a, FIG. 1A), distributed among the mesh points (e.g., on mesh points 112a-112n, FIG. 1A), and/or remotely controllable (e.g., via 20 a remote server that is in the WAN IP Network 120).

More specifically, in some embodiments, the mesh points may be equipped with one or more of: a powerline communication circuit (e.g., HomePlug<sup>TM</sup> 1.0, AV, or AV2 compliant), a dedicated 5 GHz radio circuit, and/or a sub-1 25 GHz radio circuit, for purposes of establishing the dedicated backhaul link. Moreover, some embodiments provide the capability to combine the general purpose 2.4 GHz and 5 GHz WLAN radios with dedicated backhaul circuits to form different parts of the mesh network. For example, two mesh 30 points may be connected using powerline while another two mesh points may be connected using the 2.4 GHz or 5 GHz WLAN radio. Fault tolerance mechanisms are built in to the system such that, for example, when the dedicated link is not functioning or when the performance of dedicated link is 35 significantly below the 2.4 GHz or 5 GHz radio that device uses to communicate to client, the best communication link can be used as the backhaul link.

Link measurement techniques, which are described above, can be utilized here to measure or estimate the 40 performance of the current dedicated backhaul link as well as other possible link options, to enable the selection of the best suitable backhaul link. Flow chart 2200 shows an example method for evaluating current backhaul to determine whether switching to an alternative backhaul is desirable. The method starts by monitoring and measuring the current backhaul. If there are already data packets in communication (Step 2202), then measurement can be performed on the existing data packets (Step 2204). If there is no or not enough active data communication, then, similar to 50 the rate estimation techniques described above, test packets can be sent for the measurement of backhaul performance (Step 2206).

Then, the link speed of the backhaul can be measured by using, for example, the aforementioned rate estimation techniques. For example, TX rate, RSSI, and PER can be measured to perform rate estimation on the current backhaul (Step 2208). Thereafter, the estimated rate is compared to a quality threshold specific for the type of the backhaul that is currently used (Step 2210). Similar to what has been 60 described above, the function for rate estimation for the backhaul and the quality threshold may vary based on the type of the backhaul (e.g., Powerline, sub-1G, and/or 5G), If the estimated rate in the current backhaul is below a quality threshold expected in the type of the backhaul, then the 65 specific mesh point starts to seek for a better backhaul (Step 2212). If the estimated rate is acceptable (e.g., above the

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quality threshold), then at least temporarily there is no need to switch the backhaul (Step 2214). The method can be executed from time to time, for example, every 60 minutes, can be triggered by events such as a predetermined number of losses in mesh network specific controlling packets sent via the backhaul within a certain period, or can be triggered by any other suitable mechanism.

Flow chart 2230 is an example method for finding an alternative backhaul. When the mesh point determines that an alternative backhaul is desirable, it starts to measure and evaluate other backhaul channels (Step 2232). Similar to the method illustrated in flow chart 2200, TX rate, RSSI and PER numbers can be measured on the alternative backhaul (Step 2232). Additionally, the Internet speed or a target transmission rate (discussed above) can be taken into consideration. If the estimated rate of an alternative backhaul is not larger than the current backhaul by a certain amount (Step 2234), then the alternative is only considered as a secondary backhaul (Step 2236) (e.g., because the benefit of switching is fairly limited). However, if the estimated rate of an alternative backhaul is larger than the current backhaul by a certain amount (Step 2234), then an absolute value is compared to the estimated rate of the alternative backhaul (Step 2238). Again, if the estimated rate of the alternative backhaul is not larger than an absolute amount, the alternative is only considered as a secondary backhaul (Step 2236). If the estimated rate of the alternative backhaul passes the two criteria described above, then the current backhaul can be switched to this alternative backhaul (Step 2240).

In one or more embodiments, link speeds between different mesh points as well as several other parameters can also be used to determine the best mesh topology. These parameters can include: the number of clients that are connected to each mesh point and the amount of traffic they have; the communication frequency band that is used by the clients and such frequency's potential effect on the backhaul channel; external network interference and noise on the backhaul channel; delay and jitter requirements for the traffic type that each client is supporting; the coexistence of backhaul channel(s) with the Internet service; and the coexistence of backhaul channel with clients.

As mentioned, in some cases, a combination of different backhauls may be used between two mesh points. As such, certain embodiments provide that the backhaul link may be aggregated on the MAC or the transport layer. In addition, different backhauls may be used for different clients. More specifically, the dedicated backhaul technique introduced herein can be aggregated with other available communication links. Example aggregation may include, but not limited to: powerline and 2.4G; powerline and 5G; powerline, 2.4 and 5G; Sub1G and 2.4G; Sub1G and 5G; Sub1G, 2.4G and 5G; dedicated backhaul 5 GHz and general purpose 2.4 GHz; dedicated backhaul 5 GHz and general purpose 5 GHz; dedicated backhaul 5 GHz, general purpose 2.4 GHz and general purpose 5 GHz; and so forth. In variations, routing can be used for link aggregation purposes. For example, different communication links may be of different subnet/Virtual LAN (VLAN), but can either use static routing or dynamic routing to aggregate over different bridge links. In some embodiments that implement dynamic routing, known routing strategies such as equal-cost routing can be used; alternatively, a proper ratio of cost may be assigned over each bridge link.

Further, embodiments disclosed here can utilize Layer 2 aggregation when possible for backhaul links. In some examples, a spanning tree protocol (STP) can be used to avoid loops in the redundant paths in the network. The STP

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priority may be used to give priority depending on channel condition, traffic, and QoS parameters. The Rapid Spanning Tree Protocol (which is described in the IEEE 802.1w standards) can also be used. Other example link aggregation mechanisms that can be used in the mesh network backhaul links include: Multi Path TCP (when TCP aggregation is possible); IEEE 802.3ad Link Aggregation Control Protocol (LACP); and Port Aggregation Protocol (PAgP).

Note that, for the embodiments that utilize powerline communication as dedicated backhaul, the TPUT of the 10 backhaul as well as the Internet's condition need to be more closely monitored, since a lot of interference issues may occur in such powerline communication, and in some instances, such communication may even interfere with home digital subscriber line (DSL) Internet connection (e.g., 15 as a result of the phone and electric cables being too closely located in the environment). If using powerline communication has an observable adverse effect on DSL or other Internet connection, the duty cycle of the powerline can be limited, or in some implementations, powerline communication may be avoided in the entirety.

Various frequency band in sub-1 GHz may be also be used for backhaul links in the mesh network to extend the range. Examples include 902-928 MHz in the United States, and 433.05-434.79 MHz and 863-870 MHz in Europe. In some 25 embodiments, IEEE 802.11ah can be used for sub-1G communications. Additionally or alternatively, IEEE 802.15.4 can be used. In yet another alternative, it is possible to convert an existing IEEE 802.11ac/n/g/a chipset to operate in a sub-1G frequency band. In certain cases, if the sub-1G 30 frequency band is not available in a country or if there is too much interference or noise in the sub-1G band, the fault tolerant mechanism can fall back to 2.4G/5G, powerline or other available backhaul links.

In some implementations, a dedicated 5 GHz radio is used as the dedicated backhaul. Specifically, 5 GHz ISM band is a relatively wide frequency band and, as a result, with proper hardware and software design, it is possible to place more than one radio in 5 GHz in a single device without creating unacceptably large interference. One of such example is 40 shown in FIG. 19. In such cases, a part of 5 GHz frequency band can be dedicated for backhaul purposes. Nonetheless, the mesh network can still monitor the noise and interference in the frequency band by checking the link statistics, and switch off to other available back-up channels when 45 proper.

Note that, in selecting the backhaul, a general hierarchy may be observed to avoid disruption. Moreover, generally speaking, it is preferable to not use general purpose wireless communication resources (i.e., that are used for servicing 50 data traffic from and to the clients) for backhaul purposes. Flow chart 2250 is an example method for implementing a backhaul selection hierarchy. In the illustrated example, first, only if the current backhaul is underperforming (e.g., drops below a certain threshold) (Step 2252) then is an 55 alternative backhaul considered. Otherwise, the mesh point may continue to use the current backhaul (Step 2254). If the alternative backhaul is better than the threshold, then the alternative backhaul can be used (Step 2258). On the other hand, only if all alternative backhauls are also underper- 60 forming then is the general purpose wireless resource (i.e., client facing resource) considered. If the client facing resource can provide a rate that is more than a second threshold (Step 2262), then the mesh point can utilize a select portion of the client facing resource as the backhaul. 65 Note that the second threshold may be different from the first threshold. In one example, since the client facing resource

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then would be serving both front end and back end traffic, the second threshold is higher than the first threshold. If the client facing resource cannot satisfy the second threshold, then the mesh point can indicate (e.g., on the software application) that it has a bad backhaul (Step 2266).

With the techniques introduced herein, including automated mesh point survey and guided installation for assisting the installation and configuration of a wireless mesh network, link rate estimation, roaming, and dedicated backhaul link implementation in such wireless mesh network, the present disclosure provides an integral solution where multiple wireless local area network (WLAN) mesh point devices are deployed in a relatively large environment with potential dead spots, such as a home or an office.

#### CONCLUSION

Unless contrary to physical possibility, it is envisioned that (i) the methods/steps described above may be performed in any sequence and/or in any combination, and that (ii) the components of respective embodiments may be combined in any manner.

The techniques introduced above can be implemented by programmable circuitry programmed/configured by software and/or firmware, or entirely by special-purpose circuitry, or by a combination of such forms. Such special-purpose circuitry (if any) can be in the form of, for example, one or more application-specific integrated circuits (ASICs), programmable logic devices (PLDs), field-programmable gate arrays (FPGAs), etc.

Software or firmware to implement the techniques introduced here may be stored on a machine-readable storage medium and may be executed by one or more general-purpose or special-purpose programmable microprocessors. A "machine-readable medium", as the term is used herein, includes any mechanism that can store information in a form accessible by a machine (a machine may be, for example, a computer, network device, cellular phone, personal digital assistant (PDA), manufacturing tool, any device with one or more processors, etc.). For example, a machine-accessible medium can include recordable/non-recordable media (e.g., read-only memory (ROM), random access memory (RAM), magnetic disk storage media, optical storage media, flash memory devices, etc.).

Note that any and all of the embodiments described above can be combined with each other, except to the extent that it may be stated otherwise above or to the extent that any such embodiments might be mutually exclusive in function and/or structure.

Although the present invention has been described with reference to specific exemplary embodiments, it will be recognized that the invention is not limited to the embodiments described, but can be practiced with modification and alteration within the spirit and scope of the appended claims. Accordingly, the specification and drawings are to be regarded in an illustrative sense rather than a restrictive sense.

What is claimed is:

1. A computer-implemented method for adjusting wireless network coverage in a wireless mesh network formed with one or more mesh points, the method comprising:

establishing, by a mobile application on a user device of a user, a wireless communication with a first mesh point;

causing, by the mobile application, the first mesh point to measure an external network connection speed;

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- determining, by the mobile application, a target data rate for the wireless mesh network based on the measured external network connection speed;
- instructing, via a display of the user device, the user to relocate the user device;
- upon receiving an indication of relocation of the user device, performing, by the mobile application, a link estimation based on a link quality between the first mesh point and the user device so as to forecast a link quality between the first mesh point and a second mesh point using a current location of the user device as an installation location of the second mesh point; and
- generating, on the display of the user device, a corresponding locational guidance for installing the second mesh point based on comparing a result of the per- 15 formed link estimation against the target data rate.
- 2. The method of claim 1, further comprising:
- determining, based on readings from an orientation sensor of the user device, a possible position in which the user device is held by the user; and
- comparing the possible position with a preferred position based on a model type of user device.
- 3. The method of claim 2, further comprising:
- upon determining that the possible position deviates more than a predetermined level from the preferred position, 25 instructing, via the display of the user device, the user about the preferred position.
- 4. The method of claim 2, wherein the orientation sensor includes one or more of: a gyroscope, an accelerometer, a compass, or a gravity sensor.
- 5. The method of claim 1, wherein the link estimation is performed based on a database of link performance that corresponds wireless performance of a particular type of the user device to a mesh point.
- 6. The method of claim 1, wherein the wireless commu- 35 nication with the first mesh point is established using a default network configuration, the method further compris
  - requiring, via a display of the user device, an input of a new network configuration comprising at least one of: 40 a new service set identifier (SSID) or a new network password; and
  - updating the first mesh point with the new network configuration.
  - 7. The method of claim 6, further comprising:
  - upon receiving an indication of installation of the second mesh point, establishing, by the mobile application, the wireless communication with the second mesh point.
  - 8. The method of claim 7, further comprising:
  - causing the second mesh point to be updated with the new  $\,^{50}$ network configuration.

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- 9. The method of claim 7, wherein the wireless communication with the second mesh point is based on the new network configuration.
- 10. The method of claim 1, wherein the locational guidance includes instructing the user to move closer to the first mesh point if the performed link estimation is below a lower threshold.
- 11. The method of claim 1, wherein the locational guidance includes instructing the user to move farther from the first mesh point if the performed link estimation is above an upper threshold.
- 12. The method of claim 1, wherein the locational guidance includes instructing the user to install the second mesh point at where the user device is then located if the performed link estimation is within a range of an upper threshold and a lower threshold.
- 13. The method of claim 12, wherein the upper and lower thresholds respectively are a first and a second percentage of the target data rate.
- 14. The method of claim 1, wherein the target data rate for the wireless mesh network is equal to or larger than the measured external network connection speed.
  - 15. The method of claim 1, further comprising:
  - causing the user device to roam from the first mesh point to the second mesh point after installation of the second
- 16. The method of claim 1, wherein the link quality between the first mesh point and the user device includes at least a received signal strength indicator and a physical layer
- 17. The method of claim 1, wherein the link estimation is performed based on a decision flow that factors in at least a received signal strength indicator and a physical layer data
  - **18**. The method of claim **1**, further comprising:
  - based on the link estimation, causing an adjustment in a connection between the user device and a respective mesh point to which the user device is currently con-
- 19. The method of claim 18, wherein the adjustment includes roaming the user device to another mesh point in the wireless mesh network, changing a frequency band that the user device is connected with the wireless mesh network, or a combination thereof.
- 20. The method of claim 18, wherein each mesh point in the wireless mesh network is capable of causing the adjust-
- 21. The method of claim 20, further comprising communicating the adjustment caused to another mesh point in the wireless mesh network.

# EXHIBIT 6

Page 1

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

VS.

Case No. 22-981-RGA-JLH

NETGEAR, INC.,

Defendant.

VIDEO DEPOSITION OF NETGEAR'S 30(b)(6) CORPORATE

REPRESENTATIVE & INDIVIDUALLY - JOSEPH EMMANUEL

Palo Alto, California

Wednesday, December 13, 2023

Reported by:

REBECCA L. ROMANO, RPR, CSR, CCR California CSR No. 12546 Nevada CCR No. 827 Oregon CSR No. 20-0466 Washington CCR No. 3491

Job No.: 8321

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Page 2
 1
             IN THE UNITED STATES DISTRICT COURT
                  FOR THE DISTRICT OF DELAWARE
 2
 3
     TRACKTHINGS LLC,
 4
          Plaintiff,
 5
               vs.
                                  Case No. 22-981-RGA-JLH
 6
     NETGEAR, INC.,
 7
          Defendant.
 8
 9
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11
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15
                DEPOSITION OF JOSEPH EMMANUEL, taken on
16
     behalf of the Plaintiff, at Cooley,
17
     3175 Hanover Street, Palo Alto, California,
     commencing at 9:32 a.m., Wednesday, December 13,
18
19
     2023 before REBECCA L. ROMANO, a Certified
     Shorthand Reporter, Certified Court Reporter,
20
21
     Registered Professional Reporter.
22
23
24
25
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Page 3
 1
                     APPEARANCES OF COUNSEL
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          Tommy Maduena, Videographer
```

		Page 33
1	WiFi products?	10:08:30
2	A. Yes.	
3	MR. SINGER: Please mark this as	
4	Exhibit 7.	
5	(Exhibit 7 was marked for identification	10:08:31
6	by the Court Reporter and is attached hereto.)	
7	Q. (By Mr. Singer) I will represent this is	
8	a printout of the "Patent" section of your LinkedIn	
9	profile from a few days ago.	
10	Does this look like a list of patents	10:09:29
11	that you have worked on?	
12	A. Yes.	
13	Q. Are you an inventor on each of these	
14	patents?	
15	A. Yes.	10:09:40
16	Q. For any of these patents, is the assignee	
17	NETGEAR?	
18	A. It's	
19	MR. CHEN: That's okay.	
20	Go ahead.	10:09:57
21	THE DEPONENT: Yes.	
22	Q. (By Mr. Singer) Are all of these patents	
23	assigned to NETGEAR?	
24	MR. CHEN: Objection. Calls for	
25	speculation and outside the scope.	10:10:06

,		Page 34
1	THE DEPONENT: Yes.	10:10:20
2	Q. (By Mr. Singer) Do any of these patents	
3	describe how NETGEAR's mesh WiFi systems work?	
4	MR. CHEN: Objection. Calls for a legal	
5	conclusion. Outside the scope.	10:10:38
6	THE DEPONENT: Can you rephrase?	
7	Q. (By Mr. Singer) Are any of these patents	
8	related to mesh WiFi technology?	
9	MR. CHEN: Objection. Calls for a legal	
10	conclusion. Outside the scope.	10:10:52
11	THE DEPONENT: I don't recollect. We	
12	have done so many patents.	
13	Q. (By Mr. Singer) Do you write source code	
14	for any of the NETGEAR mesh WiFi systems?	
15	A. No.	10:11:19
16	I'm a hardware engineer.	
17	Q. Who does write source code for the	
18	NETGEAR WiFi systems?	
19	MR. CHEN: Objection. Lacks foundation.	
20	Vague.	10:11:29
21	THE DEPONENT: I'm not writing the source	
22	code.	
23	Q. (By Mr. Singer) Do you know who does?	
24	A. I don't know.	
25	I don't want to speculate, but it could	10:11:40

		Page 94
1	(Exhibit 20 was marked for identification	12:55:13
2	by the Court Reporter and is attached hereto.)	
3	Q. (By Mr. Singer) Have you ever seen this	
4	document before?	
5	A. Yes.	12:55:33
6	Q. What is it?	
7	A. It's one of our patents on the dedicated	
8	backhaul.	
9	Q. Are you the first named inventor on this	
10	<pre>patent?</pre>	12:55:47
11	A. Yes.	
12	Q. And the applicant and the assignee are	
13	NETGEAR, Inc.; is that correct?	
14	A. Yes, that is correct.	
15	Q. And so does this patent relate to	12:55:57
16	NETGEAR's mesh products?	
17	MR. CHEN: Objection. Calls for a legal	
18	conclusion. Outside the scope of this deposition.	
19	THE DEPONENT: I cannot say that.	
20	Q. (By Mr. Singer) Can you please state the	12:56:18
21	patent number for the record?	
22	A. You want me to read?	
23	Yeah, US 10,681,698 B2.	
24	Q. Can you turn to Figure 1, please?	
25	Do you see where it says "Orbi	12:56:45

,		Page 95
1	Satellite"?	12:56:46
2	A. Yes.	
3	Q. What is that referring to?	
4	A. Just showing example, the satellite.	
5	Q. And why is the word "Orbi" in there?	12:56:56
6	MR. CHEN: Objection. Calls for	
7	speculation. Outside the scope of this deposition.	
8	THE DEPONENT: It's an example.	
9	Q. (By Mr. Singer) So an Orbi satellite is	
10	an example of a satellite that you are referring to	12:57:21
11	in this patent?	
12	MR. CHEN: Objection. Calls for a legal	
13	conclusion. Outside the scope of this deposition.	
14	THE DEPONENT: Same, example.	
15	Q. (By Mr. Singer) What did you mean by	12:57:38
16	<pre>it's an example?</pre>	
17	A just a satellite example.	
18	Q. Can you turn to column 3, lines 56	
19	through 59.	
20	It says "The nodes are connected by	12:58:38
21	dedicated 5-gigahertz back haul connections 23, 24.	
22	A 2.4 gigahertz connection 25 may be used as a	
23	backhaul when a 5-gigahertz connection is not	
24	available." [as read]	
25	Do you see that?	12:58:53

,		Page 96
1	A. Yes.	12:58:54
2	Q. Is that also the case for an Orbi mesh	
3	WiFi system?	
4	MR. CHEN: Objection. Calls for a legal	
5	conclusion. Outside the scope of this deposition.	12:59:02
6	Q. (By Mr. Singer) Sorry, strike that.	
7	In an Orbi mesh WiFi system, where are	
8	nodes connected by a 5-gigahertz dedicated backhaul	
9	at times?	
10	THE DEPONENT: Can you repeat?	12:59:22
11	Q. (By Mr. Singer) Sorry, in a NET	
12	sorry, strike that.	
13	In an Orbi 5-gigahertz	
14	Okay. That's fine.	
15	In column 3, line 11, what is meant by "a	12:59:55
16	daisy chain approach"?	
17	MR. CHEN: Objection. Outside the scope	
18	of the deposition to the extent you are asking	
19	about this patent. And calls for legal conclusion.	
20	THE DEPONENT: I'm not an attorney. I	01:00:14
21	don't want to interpret the patents.	
22	Q. (By Mr. Singer) Okay. Can you refer	
23	back to Exhibits 12 and 13.	
24	A. You said 12 and 13?	
25	Yes.	01:01:55

		Page 139
1	THE VIDEOGRAPHER: Stand by. The time is	02:30:14
2	2:30 p.m., and we are going off the record.	
3	(Recess taken.)	
4	THE VIDEOGRAPHER: The time is 2:37 p.m.,	
5	and we are back on the record.	02:37:34
6	MR. SINGER: Can you enter this as	
7	Exhibit 28?	
8	THE COURT REPORTER: 27.	
9	MR. SINGER: Can you enter this as	
10	Exhibit 27?	02:38:10
11	(Exhibit 27 was marked for identification	
12	by the Court Reporter and is attached hereto.)	
13	Q. (By Mr. Singer) Have you ever seen this	
14	document before?	
15	A. Yes.	02:38:25
16	Q. What is it?	
17	A. It's one of our patents.	
18	Q. And can you state the patent number for	
19	the record?	
20	A. Yeah, it's US 10,292,159 B2.	02:38:36
21	Q. And you are an inventor on this patent?	
22	A. Yes.	
23	Q. And both the applicant and the assignee	
24	are NETGEAR, Inc.	
25	A. Yes.	02:38:54

,		Page 140
1	Q. And if you refer to Figure 3A.	02:39:10
2	Do you see where it says "Install the	
3	base Orbi"?	
4	A. Yes.	
5	Q. What is that referring to?	02:39:23
6	MR. CHEN: Objection. Calls for legal	
7	conclusion. Outside the scope of this deposition.	
8	THE DEPONENT: Again, I'm not an	
9	attorney. I do want to say.	
10	Q. (By Mr. Singer) But you worked on this	02:39:55
11	patent during your time at NETGEAR?	
12	A. Yeah, we worked on this.	
13	Q. Okay.	
14	MR. SINGER: Please enter Exhibit 28.	
15	(Exhibit 28 was marked for identification	02:40:15
16	by the Court Reporter and is attached hereto.)	
17	MR. SINGER: I will represent that this	
18	is a printout of the NETGEAR website, with the	
19	title "What do the LEDs on my Orbi router and	
20	satellite mean?"	02:41:29
21	Q. (By Mr. Singer) Do you see "The power	
22	and ring LEDs on your Orbi router and satellite	
23	tell you their current status. Reference the	
24	tables below for information on what each color	
25	means"?	02:41:46

Page 162 1 I, Rebecca L. Romano, a Registered 2 Professional Reporter, Certified Shorthand 3 Reporter, Certified Court Reporter, do hereby 4 certify: 5 That the foregoing deposition testimony was taken remotely before me at the time and place 6 7 therein set forth; that any deponent in the foregoing deposition, prior to testifying, was 8 9 administered an oath; that a record of the 10 deposition was recorded stenographically by me and 11 which was thereafter transcribed under my 12 direction; that the foregoing transcript is a true record of the testimony given. 13 14 Further, that if the foregoing pertains to the 15 original transcript of a deposition in a Federal Case, before completion of the proceedings, review 16 17 of the transcript [X] was [ ] was not requested. 18 I further certify I am neither financially 19 interested in the action nor a relative or employee 20 of any attorney or any party to this action. 21 IN WITNESS WHEREOF, I have subscribed my 22 name this 18th day of December, 2023. 23 24 Rebecca L. Romano, RPR, CCR 2.5 CSR. No 12546

## EXHIBIT 7

#### (12) United States Patent

Emmanuel et al.

US 10,681,698 B2 (10) Patent No.: (45) Date of Patent: Jun. 9, 2020

#### (54) DEDICATED BACKHAUL FOR WHOLE HOME COVERAGE

(71) Applicant: NETGEAR, INC., San Jose, CA (US)

(72) Inventors: Joseph Amalan Arul Emmanuel, Cupertino, CA (US); Peiman Amini,

Mountain View, CA (US)

(73) Assignee: NETGEAR, INC., San Jose, CA (US)

Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

(21) Appl. No.: 15/940,890

(22)Filed: Mar. 29, 2018

(65)Prior Publication Data

> US 2018/0288768 A1 Oct. 4, 2018

#### Related U.S. Application Data

(63) Continuation of application No. 15/271,912, filed on Scp. 21, 2016, now Pat. No. 9,967,884. (Continued)

Int. Cl. (51)H04W 72/04 (2009.01)H04W 76/15 (2018.01)(Continued)

(52) U.S. Cl.

CPC ....... H04W 72/0453 (2013.01); H04L 12/44 (2013.01); H04L 43/0888 (2013.01); H04L 43/0894 (2013.01); H04L 43/10 (2013.01); H04L 43/16 (2013.01); H04L 45/20 (2013.01); H04W 4/023 (2013.01); H04W 24/06 (2013.01);

(Continued)

#### (58)Field of Classification Search

See application file for complete search history.

References Cited (56)

#### U.S. PATENT DOCUMENTS

9/2006 Berkman 7,113,134 B1 7,155,167 BI 12/2006 Carty (Continued)

#### FOREIGN PATENT DOCUMENTS

9/2009 CN CN 101523809 A 101610558 A 12/2009 (Continued)

#### OTHER PUBLICATIONS

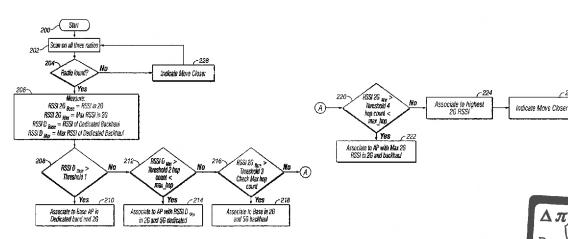
"WLAN High Availability", Technical white paper; Hewlett-Packard Development Company, L.P., Oct. 2014, 8 pages.

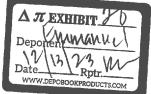
Primary Examiner - Jay P Patel (74) Attorney, Agent, or Firm - Perkins Coie LLP

ABSTRACT

A dedicated backhaul for whole home coverage variously applies optimization techniques, e.g. using the 5 GHz high band or low band as a dedicated backhaul; using the 2.4 GHz band as backup if the 5 GHz band fails to reach between nodes; using Ethernet when it is better than the 5 GHz and 2.4 GHz bands and it is available; and using a spanning tree protocol or a variant to avoid loops. The dedicated backhaul is used if the received signal strength indication (RSSI) of the dedicated channel is above a threshold. In embodiments, a daisy chain uses probe request contents to communicate hop count and link quality between the nodes by attempting to route directly if link quality is better than a defined threshold. For each extra hop, there must be some percentage gain over smaller hops. If the link is below some threshold, it is not used.

#### 22 Claims, 13 Drawing Sheets





## US 10,681,698 B2 Page 2

Related	U.S. Application Data	2012/0020319 A1		Song et al.
		2012/0129517 A1		Fox et al. Babiarz et al.
(60) Provisional app	lication No. 62/336,503, filed on May	2012/0224481 A1 2012/0224484 A1		Babiarz et al.
13, 2016, prov	visional application No. 62/253,540,	2012/0225646 A1		Mochida et al.
filed on Nov. 1		2012/0223040 A1 2012/0230206 A1		Baliga et al.
med on rev. 1	0, 2013.	2012/0294200 A1		Wang et al.
(51) Int. Cl.		2013/0194948 A1*		Mallik H04W 24/00
	(2006.01)	2013/012/12/10 111	V. 2013	370/252
H04L 12/44	(2006.01)	2013/0260777 AI*	10/2013	Gormley H04W 72/0473
H04L 12/26	(2006.01)			455/452.1
H04L 12/733	(2013.01)	2013/0331115 A1*	12/2013	Falconetti H04L 5/0053
H04W 4/02	(2018.01)			455/452.2
H04W 24/08	(2009.01)	2014/0064133 A1*	3/2014	Kazmi H04W 24/10
H04W 36/30	(2009.01)	2014/02/20412	0/2014	370/252
H04W 36/36	(2009.01)	2014/0233412 A1		Mishra et al. Zhou et al.
H04W 24/06	(2009.01)	2014/0254400 A1 2014/0270306 A1		Luna et al.
H04W 40/12	(2009.01)	2015/0018028 A1		Uplenchwar et al.
H04W 24/04	(2009.01)	2015/0029067 A1		Donaldson et al.
H04W 72/08	(2009.01)	2015/0049616 A1*		He H04W 24/02
H04W 76/10	(2018.01)			370/252
H04W 84/18	(2009.01)	2015/0092681 A1	4/2015	Fernando et al.
	, ,	2015/0103685 A1		Butchko et al.
H04W 84/12	(2009.01)	2015/0173111 A1*	6/2015	Agarwal H04W 8/04
(52) U.S. Cl.				370/329
CPC	H04W 24/08 (2013.01); H04W 36/30	2015/0195033 A1*	7/2015	Maric H04B 7/15592
(2013	3.01); <b>H04W</b> 36/36 (2013.01); <b>H04W</b>	2015/0201231 114	<b>=</b> (2015	455/418
40/1	2 (2013.01); H04W 76/15 (2018.02);	2015/0201334 A1*	//2015	Li H04W 12/08
H.	104W 24/04 (2013.01); H04W 72/085	2015/0215701 A1	7/2015	726/3 Geller et al.
	3.01); H04W 76/10 (2018.02); H04W	2015/0215791 A1 2015/0215853 A1*		Ling H04W 64/003
,	12 (2013.01); H04W 84/18 (2013.01)	2015/0215855 AT	1;2013	370/254
0.11	12 (2015.01), 110777 0 7/10 (2015.01)	2015/0264614 A1	9/2015	Stager et al.
(56) <b>F</b>	References Cited	2015/0334612 A1*		Ray Chaudhuri
(50)	ceretenees Cheu			H04W 36/0094
U.S. P.	ATENT DOCUMENTS			455/437
		2015/0334750 A1	11/2015	
7,502,354 B1	3/2009 Maufer	2016/0007273 A1		Pang et al.
	7/2009 Hart et al.	2016/0029384 A1		Sidhu et al.
• •	8/2012 Weil et al.	2016/0066249 A1		Dukes et al.
	5/2013 Lu	2016/0094946 A1 2016/0127969 A1*		Keithley Pao H04W 48/20
	4/2015 Gatewood et al.	2010-0127909 A1	5:2010	455/437
	1/2015 Scherzer et al. 0/2016 Sekine	2016/0142163 A1	5/2016	Sirotkin
	1/2017 Mehta	2016/0192203 A1		Gokturk et al.
	4/2018 Sung	2016/0212755 A1	7/2016	Cao et al.
	4/2002 Ades	2016/0227544 A1		Katar et al.
	3/2005 Kubler et al.	2016/0269097 A1		Islam et al.
	9/2007 Walton et al.	2016/0286374 A1		Patil et al.
	2/2007 Kelley et al.		10/2016	Chari H04W 40/12
	1/2008 Chan	2016/0308755 A1 2016/0337960 A1*		Nagasaka H04W 48/18
	4/2008 Thubert et al. 0/2008 Weil et al.	2016/0366632 A1		Cui et al.
2009/0003279 A1*	1/2009 Abusch-Magder	2017/0006431 A1		Donovan et al.
2003.0003273 111	H04W 36/00835	2017/0048913 A1	2/2017	Teyeb et al.
	370/331	2017/0070919 A1*		Verger H04L 65/1083
2009/0029645 A1*	1/2009 Leroudier H04B 7/2606	2017/0118705 A1		Tran et al.
	455/7	2017/0125920 A1		Spiel et al.
	2/2009 Zhao et al.	2017/0127295 A1 2017/0127306 A1*		Black et al. Tan Bergstrom H04W 24/10
	3/2009 Stamoulis et al.	2017/0127300 A1 2017/0127325 A1		Vikberg et al.
	5/2009 Ishii	2017/0164260 A1		Shi et al.
2009/0135738 A1	5/2009 Mhatre et al.	2017/0164323 A1		Markhovsky et al.
	5/2009 Su et al. 9/2009 Ko et al.	2017/0215091 A1	7/2017	Ling
	0/2009 Rangarajan et al.	2017/0238189 A1		Nolan et al.
2010/0118830 A1	5/2010 Stephenson et al.	2017/0251410 A1		Comstock
	6/2010 Aggarwal et al.	2017/0251429 A1		Kapoor et al.
2010/0231473 A1_	9/2010 Shtrom et al.	2017/0325243 A1	11/2017	Yasukawa et al.
2010/0234071 A1*	9/2010 Shabtay H04B 7/0408	PODEI	יית דואר דואי	NET EXOCULATIVE
2010/02/6416 41	455/562.1	FOREIC	IN PALE	NT DOCUMENTS
	9/2010 Sinha et al. .0/2010 Lu	CN 10179	6869 A	8/2010
	1/2010 Lu 1/2010 Suemitsu et al.		7553 A	3/2010
	4/2011 Cai et al.		0306 A	10/2012
	0/2011 Wietfeldt et al.		7141 A	1/2013
2011/0286404 A1 I	11/2011 Abraham et al.		1957 A	1/2015
2011/0299422 A1 1	.2/2011 Kim et al.	CN 10470	3193 A	6/2015

### US 10,681,698 B2 Page 3

(56)	References Cited FOREIGN PATENT DOCUMENTS			
CN	104756474 A	7/2015		
CN	104854901 A	8/2015		
CN	104885378 A	9/2015		
CN	105027604 A	11/2015		
EP	2844020 A1	3/2015		
WO	2016125055 A1	8/2016		

<sup>\*</sup> cited by examiner

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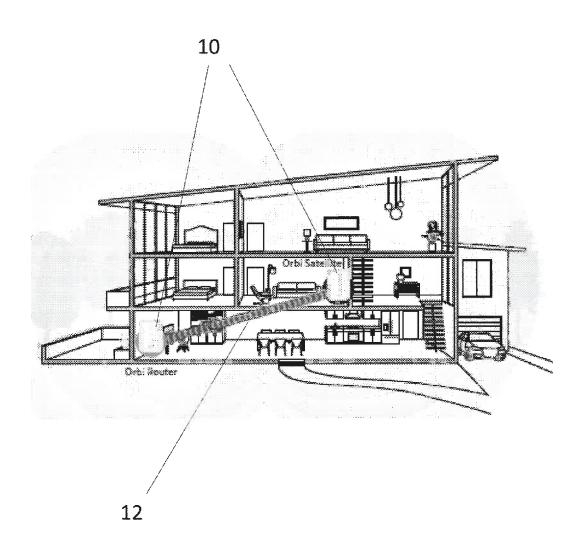
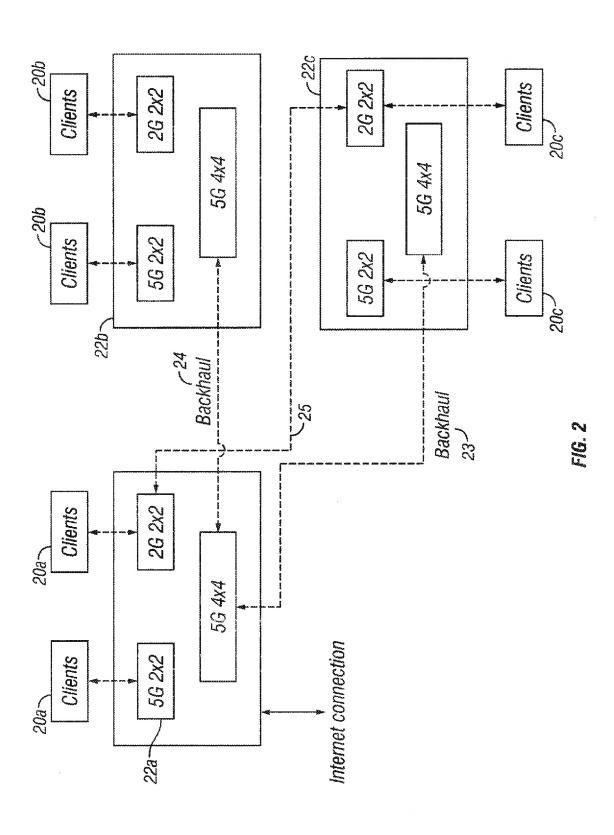


FIGURE 1

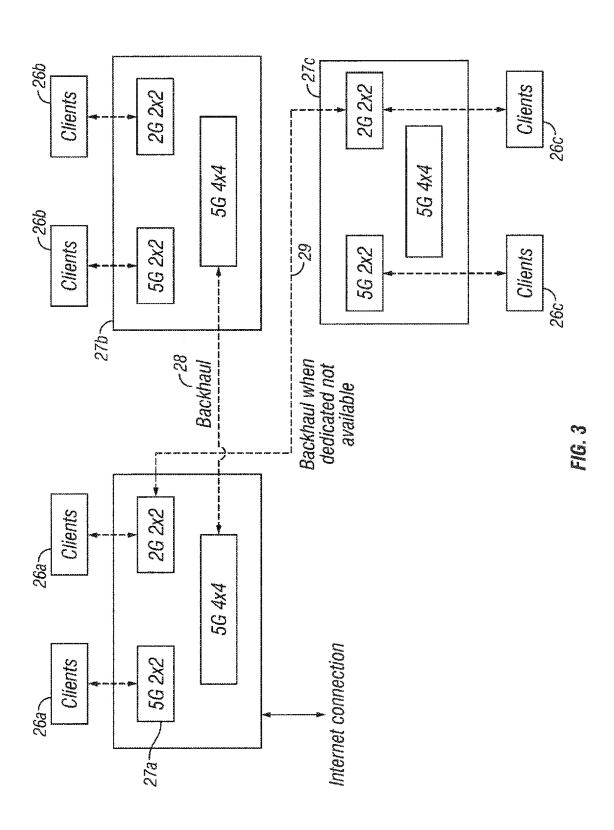
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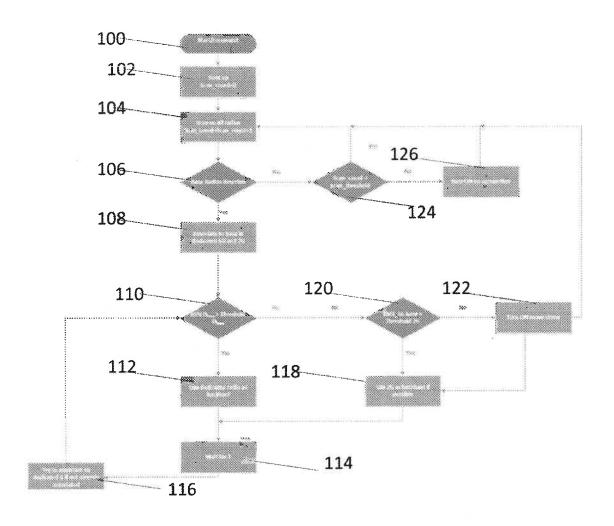
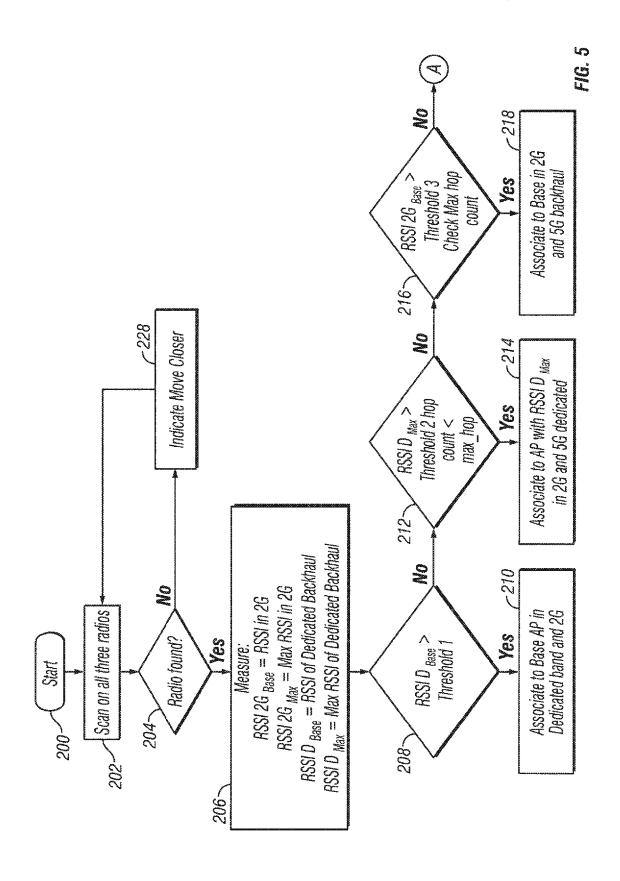


FIGURE 4

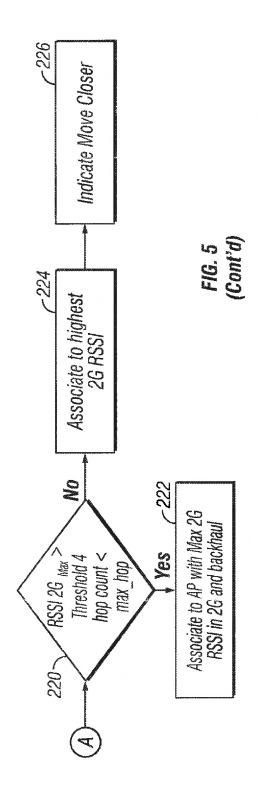
Jun. 9, 2020

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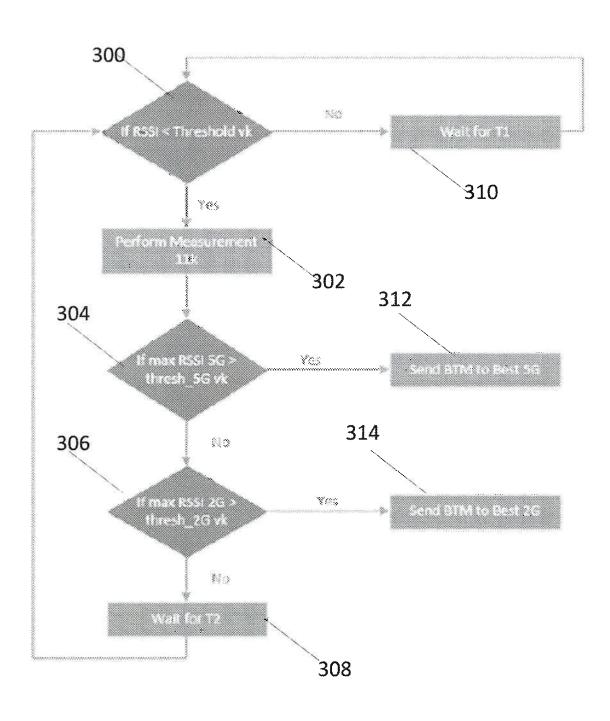


FIGURE 6

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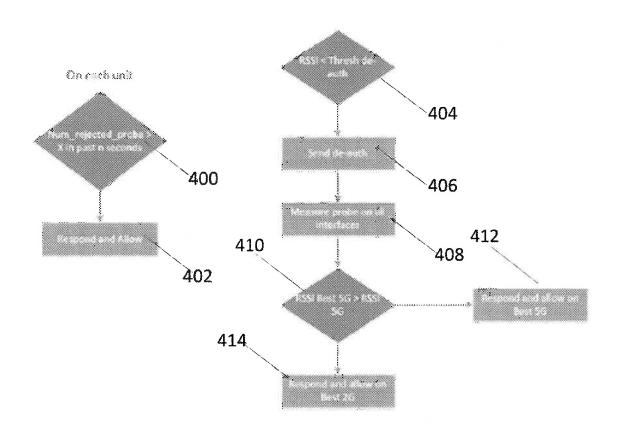


FIGURE 7

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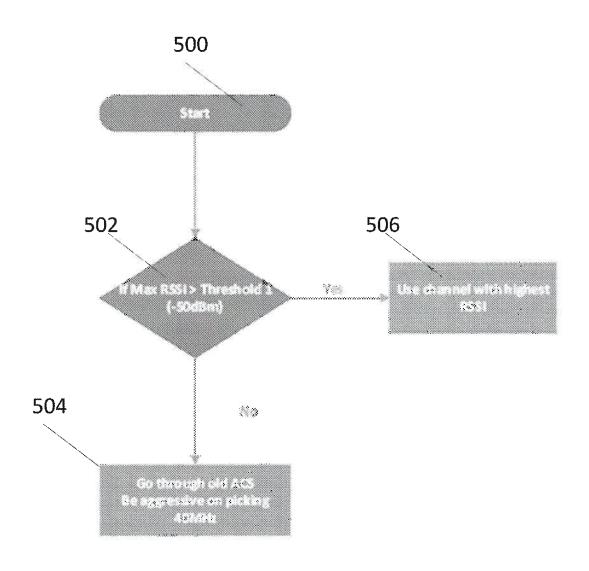


FIGURE 8

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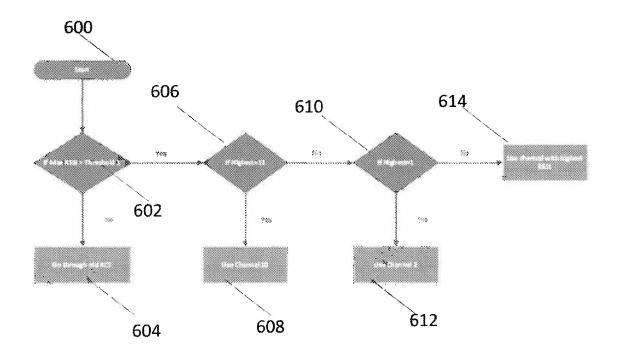


FIGURE 9

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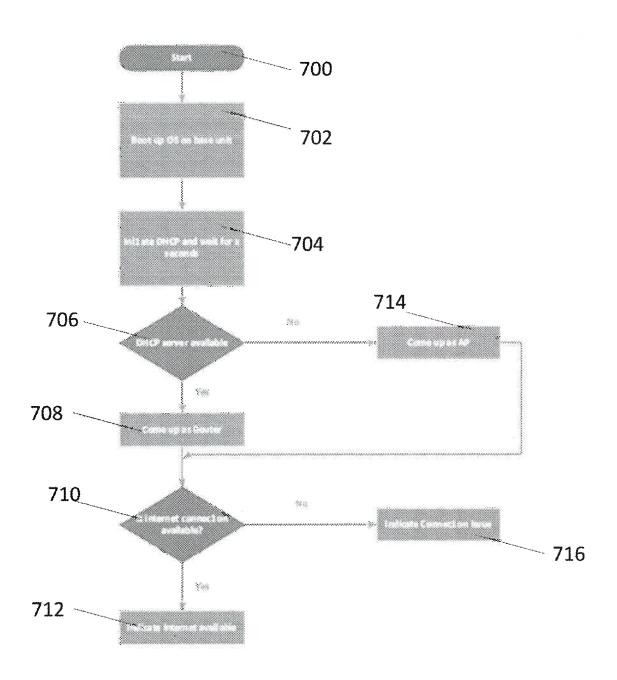


FIGURE 10

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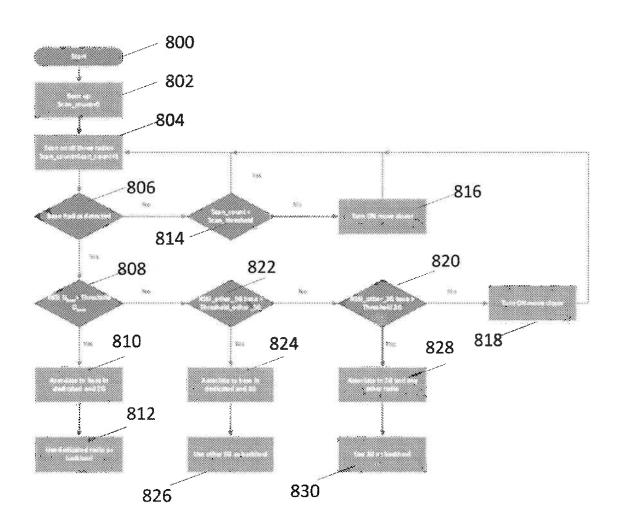


FIGURE 11

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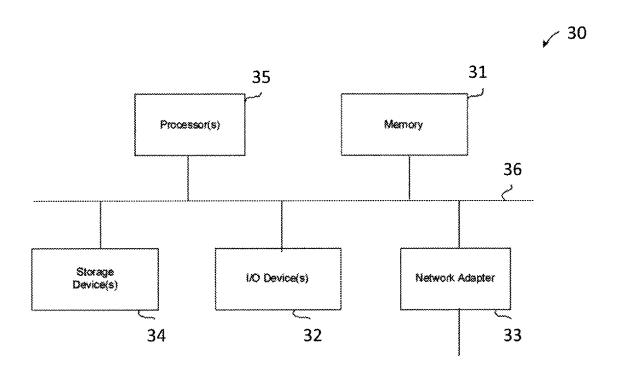


FIGURE 12

#### 1

#### DEDICATED BACKHAUL FOR WHOLE HOME COVERAGE

#### CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation (CON) application of U.S. utility patent application Ser. No. 15/271,912, entitled DEDICATED BACKHAUL FOR WHOLE HOME COVERAGE, filed Sep. 21, 2016, now U.S. Pat. No. 9,967,884, which claims priority to U.S. provisional patent application No. 62/253,540, entitled METHOD AND APPARATUS FOR WHOLE HOME WI-FI COVERAGE, filed Nov. 10, 2015, and to U.S. provisional patent application No. 62/336, 503. entitled DEDICATED BACKHAUL FOR WHOLE HOME COVERAGE, filed May 13, 2016; all of which are incorporated herein in their entirety by this reference thereto.

#### **FIELD**

The invention relates to telecommunications networks. More particularly, the invention relates to a dedicated backhaul for whole home coverage.

#### BACKGROUND

In a hierarchical telecommunications network the backhaul portion of the network comprises the intermediate link between the core network, or backbone network and the small subnetworks at the edge of the entire hierarchical network. In the home, such network can comprise an access point (AP) with links to various repeaters. A mesh network is often used to establish a wireless backhaul between the AP and the various repeaters. With mesh networking, access points are connected wirelessly and exchange data frames with each other to forward traffic to/from a gateway point, such as the AP. However, a mesh network is difficult to set up and maintain, especially where intermediate links between the edge and the access point are added, such as when intermediate repeaters relay traffic between the AP and a remote repeater that is out of range of the AP.

#### **SUMMARY**

A dedicated backhaul for whole home coverage variously applies optimization techniques, e.g. using the 5 GHz high band or low band as a dedicated backhaul; using the 2.4 GHz band as backup if the 5 GHz band fails to reach between nodes; using Ethernet when it is better than the 5 GHz and 2.4 GHz bands and it is available; and using a spanning tree protocol or a variant to avoid loops. The dedicated backhaul is used if the received signal strength indication (RSSI) of the dedicated channel is above a threshold. In embodiments, a daisy chain uses probe request contents to communicate hop count and link quality between the nodes by attempting to route directly if link quality is better than a defined threshold. For each extra hop, there must be some percentage gain over smaller hops. If the link is below some threshold, it is not used.

#### **DRAWINGS**

FIG. 1 is a schematic diagram showing a dedicated backhaul for whole home coverage according to the invention:

FIG. 2 is a schematic diagram showing a 5 GHz backhaul according to the invention;

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FIG. 3 is a schematic diagram showing a 5 GHz backhaul (FIG. 2A) 2.4 GHz and 5 GHz backhaul (FIG. 2B) according to the invention:

FIG. 4 is a flow diagram showing a star topology boot up operational phase of a dedicated backhaul for whole home coverage according to the invention;

FIG. 5 is a flow diagram showing a daisy chain operational phase of a dedicated backhaul for whole home coverage according to the invention;

FIG. 6 is a flow diagram showing an 802.11k/v client roaming operational phase of a dedicated backhaul for whole home coverage according to the invention;

FIG. 7 is a flow diagram showing a legacy client steering operational phase of a dedicated backhaul for whole home coverage according to the invention;

FIG. 8 is a flow diagram showing a 2.4 GHz channel selection operational phase of a dedicated backhaul for whole home coverage according to the invention;

FIG. 9 is a flow diagram showing a system ACS opera-20 tional phase of a dedicated backhaul for whole home coverage according to the invention;

FIG. 10 is a flow diagram showing a router or bridge determination operational phase of a dedicated backhaul for whole home coverage according to the invention;

FIG. 11 is a flow diagram showing a detailed star topology boot up operational phase of a dedicated backhaul for whole home coverage according to the invention; and

FIG. 12 shows a diagrammatic representation of a machine in the example form of a computer system within which a set of instructions for causing the machine to perform one or more of the methodologies discussed herein may be executed.

#### DESCRIPTION

Embodiments of the invention provide several techniques for establishing and maintaining a dedicated backhaul for whole home coverage. FIG. 1 is a schematic diagram showing a dedicated backhaul for whole home coverage according to the invention. In FIG. 1, a system of smart Wi-Fi nodes 10 includes a dedicated backhaul 12 to provide whole home coverage and the fastest speed to the Internet. In operation, a router is placed in service as the access point (AP). A satellite device is then added, synced to the AP, and a dedicated backhaul is established there between. LEDs on the devices indicate progress and success with syncing of the devices.

Embodiments of the invention variously apply optimization techniques, such as using the 5 GHz high band or low band as a dedicated backhaul; using the 2.4 GHz band as backup if the 5 GHz band fails to reach between nodes; using Ethernet when it is better than the 5 GHz and 2.4 GHz bands and it is available; and using a spanning tree protocol or a variant to avoid loops.

In connection with embodiments of the invention, a spanning tree protocol is a network protocol that builds a logical loop-free topology for Ethernet networks, the basic function of which is to prevent bridge loops and the broadcast radiation that results from them. Spanning tree also allows a network design to include spare (redundant) links to provide automatic backup paths if an active link fails. This is done without the danger of bridge loops, or the need for manual enabling or disabling of these backup links. As the name suggests, the spanning tree algorithm creates a spanning tree within a network of connected layer-2 bridges, and disables those links that are not part of the spanning tree, leaving a single active path between any two network nodes.

The spanning tree algorithm was originally standardized as IEEE 802.1D, but the functionality, spanning tree, rapid spanning tree and multiple spanning tree previously specified in 802.1D, 802.1s and 802.1w respectively has been incorporated into IEEE 802.1Q-2014.

In embodiments of the invention, the dedicated backhaul is used if the received signal strength indication (RSSI) of the dedicated channel is above a threshold. The threshold is a parameter that can be defined and modified on the hardware after hardware qualification is done.

Some embodiments of the invention apply a daisy chain approach (discussed below), which uses probe request contents to communicate hop count and link quality between the nodes. Such embodiments attempt to route directly if link quality is better than a defined threshold. For each extra hop, 15 there must be some percentage gain over smaller hops. If the link is below some threshold, it is not used; and Wi-Fi protected setup (WPS) is extended across several nodes so the node can join on anyone.

When a new node is added to the network, the node sees 20 the contents of the information element for a daisy chain from all neighboring nodes. In addition to the content, the node checks signal strength of other APs using the content of the information element (hop count, data rate to main AP) and RSSI of the neighboring node. The node then decides to 25 which AP it is to connect. Preference is given to the main AP or nodes with less hop to avoid extra delay and the overhead of multiple hops.

In some embodiments of the invention the backhaul is used to push a configuration. In such embodiments of the 30 invention the nodes that are in the network and are talking over backhaul channels can configure a new node. Configuration can be pushed by pressing buttons or by an app on a smartphone.

There is a sync button on each unit. A user can press the 35 sync button on a new unit and press the sync button on any previously present unit. The sync triggers a software process which results in the new unit being programmed by units that are already on the network. In the process, the new unit receives a Wi-Fi configuration, networking configuration, 40 and other configuration files.

The phone app can trigger the sync process by communicating with the new unit and previously existing units using Wi-Fi, Bluetooth, or both.

The 5 GHz high band is defined as a dedicated backhaul 45 in embodiments of the invention. The high band is defined in US as channels 100 to 140+149 to 165 and in Europe as DFS band channels 100 to 140. If the dedicated wireless link falls below the quality threshold, the 2.4 GHz band may be used as a backup option. The decision as which band is used 50 for backhaul may differ from satellite to satellite.

FIG. 2 is an example in which the dedicated 5 GHz band is used as a method of communication between two devices. In FIG. 2, a plurality of client devices 20a-20c are associated with respective nodes 22a-22c. The nodes each include one 55 or more 2.4 GHz radios and one or more 5 GHz radios. The nodes are connected by dedicated 5 GHz backhaul connections 23, 24. A 2.4 GHz connection 25 may be used as a backhaul when a 5 GHz connection is not available. When a 2.4 GHz connection is used as the backhaul it is shared for 60 both clients and for the backhaul. Those skilled in the art will appreciate that any other connection may be substituted for the 5 GHz backhaul connection when such connection is not available, including for example another 5 GHz radio, a radio in a band other than 5 GHz and 2.4 GHz, etc.

FIG. 3 is an example in which the dedicated 5 GHz band is used for one satellite and the 2.4 GHz is used for another

satellite. In FIG. 3, a plurality of client devices 26a-26c are associated with respective nodes 27a-27c. The nodes each include one or more 2.4 GHz radios and one or more 5 GHz radios. The nodes 27a, 27b are connected by a dedicated 5 GHz backhaul connection 28. A 2.4 GHz connection 29 is used as a dedicated backhaul between the nodes 27a, 27c when a 5 GHz connection is not available.

FIGS. 4-11 are flow diagrams showing operational phases of a dedicated backhaul for whole home coverage according to the invention, where FIG. 4 shows a star topology boot up, FIG. 5 shows a daisy chain flow chart, FIG. 6 shows 802.11k/v client roaming, FIG. 7 shows legacy client steering, FIG. 8 shows 2.4 GHz channel selection, FIG. 9 shows system ACS, FIG. 10 shows router or bridge determination, and FIG. 11 shows a detailed star topology boot up. In some embodiments, 802.11r is used to speed up key exchange.

Topology defines the arrangement in which nodes are connected in the network, including which nodes are directly connected and which communication channel and technology is used for different nodes to talk. Star topology is an arrangement in which all the nodes are directly connected to the base node. The base node is the node that is connected to the home gateway. In star topology, the software running on the satellite and base nodes makes a decision as which wireless band works the best for connection between the satellite and the base.

A dedicated wireless band is the preferred method of wireless communication if the dedicated band is available for communication and the quality of the dedicated link is better than a defined threshold.

Wireless features in embodiments of the invention include star topology or daisy chain topology given network topology and channel conditions, client steering, unit on-boarding using a vendor specific information element (VIE) and WPS, auto channel selection (ACS) and 2.4G bandwidth, Bluetooth low energy (BLE), and channel planning. For purposes of the discussion herein, a VIE is an information element (IE) that a vendor, such as Netgear, can add to communicate information that is specific to that vendor. All of the IEs that are described herein are vendor IEs.

For star only, the 5 GHz dedicated channel is the primary backhaul channel. If 5 GHz does not work, the system tries to use the 2.4 GHz band. The unit associates on both bands and uses 5 GHz if the RSSI is above a predefined threshold, e.g. -80 dBm. If the RSSI is below the threshold, the satellite unit uses the 2.4 GHz band as backhaul and the 5 GHz backhaul is not used. If the RSSI of the 2.4 GHz and 5 GHz bands is below a threshold (-80 dBm), an LED indicates that the unit needs to be moved closer.

In FIG. 4, a star topology boot up sequence begins with a start/reconnect (100), where a boot up Scan\_count-0 (102). A scan is performed on all radios, where Scan\_count-Scan count+1 (104). If base radios are detected (106), they are associated to a base in a dedicated 5 GHz and 2.4 GHz band (108). If a determination RSSI D<sub>base</sub>>Threshold D<sub>base</sub> (110) is made, then a dedicated radio is used as backhaul (112) and the system waits for T (114). The system then tries to associate a dedicated 5 GHz radio if one is not already associated (116) and a determination RSSI D<sub>base</sub>>Threshold (110) is made. If a determination RSSI  $D_{base}$ >Threshold  $D_{base}$  (110) is not made, where RSSI\_2G base>Threshold 2G (120), then 2.4 GHz is used as backhaul if possible (118) and, if not, then the system turns a move closer notification on (122). If base radios are not detected (106), and Scan\_count<Scan\_threshold (124), then the system turns a no connection notification on (126).

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In embodiments of the invention, a daisy chain is used. In daisy chain 5 GHz dedicated band is preferred if the RSSI meets predetermined thresholds. The system tries to use 5 GHz dedicated and star, if possible. If 5 GHz star cannot be used, the system tries using a 5 GHz daisy chain. If 5 GHz does not work in star or daisy chain topologies, the system tries using 2.4G as a last resort. A 5 GHz dedicated daisy chain is preferred over the 2.4 GHz band if the RSSI is good enough.

In FIG. 5, a daisy chain sequence starts (200), and the 10 system scans on all three radios (202). If a radio is not found (204), the system indicates that the user should move closer (228). The system measures the following RSSI values:

RSSI 2G<sub>base</sub>=RSSI in 2.4 GHz,

RSSI 2G<sub>max</sub>=Max RSSI in 2.4 GHz,

RSSI D<sub>base</sub>=RSSI of dedicated backhaul,

RSSI  $D_{max}^{\text{max}}$ =Max RSSI of dedicated backhaul (206) and, then determines if RSSI  $D_{base}$ >Threshold 1 (208). If so, the system associates to a base AP in a dedicated band and 2.4 GHz (210). If, however, RSSI  $D_{base}$ >Threshold 2 and hop 20 count<max\_hop (212), then the system associates to an AP with RSSI  $D_{max}$  in 2.4 GHz and 5 GHz dedicated (214). Further, if RSSI  $D_{base}$ >Threshold 3, the system checks max hop count (216) and, if so, then associates to the base in the 2.4 GHz and 5 GHz backhaul (218). Again, if RSSI 25  $D_{base}$ >Threshold 4 and hop count<max\_hop (220), then the system associates to the highest 2.4 GHz RSSI (222), and indicates that the user should move closer (226).

In embodiments of the invention, for client steering using basic service set (BSS) transition management (BTM), the system relies on 802.11v and 802.11k when available and when the client behaves. This is the safest steering. For on-band steering, the system uses the RSSI and loads to move clients from 2.4 GHz to 5 GHz. The system does not use load to move clients from 5 GHz to 2.4G. On moving 35 clients from unit to unit, if the RSSI drops below some threshold, the system checks the RSSI of the other APs. If the RSSI of other APs is above a threshold on 5 GHz, the system moves to 5 GHz; if the RSSI of other APs is above some other threshold in the 2.4 GHz band, the system moves 40 the clients to 2.4G of the other AP.

In FIG. 6, for 802.11k/v client roaming, if RSSI<threshold vk (300) is not true, then the system waits for T1 (310); and, if true, the system performs measurement 11k (302). If max RSSI 5G>thresh\_5G vk (304), the system 45 sends BTM to best 5 GHz (312). If not, the system determines if max RSSI 2G>thresh\_2.G vk (306) and, if so, the system sends BTM to best 2.4 GHz (314), else the system waits for T2 (308).

In embodiments of the invention, wireless features for 50 legacy client steering are used for clients that do not support 802.11v/k or clients that do not have the correct implementation. This client steering occurs during an idle period if the client has no uplink packets for X seconds. The RSSI threshold is below that which disconnects the client. The 55 RSSI may be different for 2.4 GHz and 5 GHz. When the client connects back, the system tries to steer the client to the right AP by having it associate to an AP which has an RSSI above a threshold and hop count above a threshold. The system rejects a probe response and measures RSSI for X tries. The system then lets the client associate to any band of any radio it desires.

In FIG. 7, in a legacy client steering, on each unit, a determination is made if num\_rejected\_probe>X in past n seconds (400) and, if so, the unit responds and is allowed 65 (402). The system for allowed units determines if RSSI<thresh de-auth (404), sends a de-auth (406), measures

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a probe on all interfaces (408), and determines RSSI best 5G>RSSI 5G (410). If the later is true, then the system responds and allows a backhaul on the best 5 GHz (412); else, the system responds and allows a backhaul on the best 2.4 GHz (414).

In embodiments of the invention, WPS is used for onboarding new units on the backhaul and for addition of a unit with different backhaul credential to the network. WPS works with a hidden SSID on the backhaul. Only units with a VIE can go through WPS procedure on a dedicated channel.

In embodiments of the invention, the VIE is used to mark a device. The VIE is included in probes, beacons, association, and authentication frames, or a subset of these packets.

15 A device looks for the VIE to see the other side. If the VIE is present, then the device goes through an eight-way handshake.

The vendor IE content includes capability, dedicated band, hop count, steering capabilities, and transmit power, 2.4 GHz channel planning, and 5 GHz channel planning.

There may be one or more VIEs that are defined by the vendor and that are used to give information about the node to new devices that have not connected or joined the network. The new devices must know what other devices are in the network, what capabilities the other nodes have, and how each device is connected to Internet, i.e. what data rate is available to the main router, how many hops, 2.4 GHz backhaul, 5 GHz backhaul. There is a version of software in the VIE with which each device can know what software the other devices are using, and with which the device can talk over using same application programming interface (API) structure.

On the satellite unit, if a backhaul connection not in place, WPS is used to find a backhaul connection. Once a credential is acquired on one backhaul channel, it is copied to the other one. If the backhaul credential is already in place and the unit is connected, a WPS button is used to initiate WPS with clients or other satellite units on a dedicated channel.

In embodiments of the invention, 2.4 GHZ channel selection is used if there are no APs in the vicinity. If there is an AP in the vicinity, the channel where the AP with highest RSSI resides is picked. The system only considers APs with an RSSI that is higher than -80 dBm for 20/40 MHz coexistence (enable by default) and ignores a 20/40 coexistence bit reported by clients (enable by default).

In FIG. 8, a 2.4 GHz channel selection starts (500). If max RSSI>threshold 1 (-50 dBm) (502), then the system uses the channel with highest RSSI (506); else, the system goes through the ACS and is aggressive on picking 40 MHz (504).

In embodiments of the invention, BLE sets up the SSID and password. BLE is also used for Wi-Fi diagnosis purposes. BLE may be used to allow guest access and BLE mesh.

BLE has a mode which is referred to as Generic Attribute Profile (GATT). In GATT, it is not necessary for two device to pair and go through a pairing process before they can communicate over BLE. As a result, any BLE capable device can get information over BLE. Thus, new devices in a home can get an SSID and password using BLE, and they can use that SSID and password to connect to Wi-Fi if the user wants to use Wi-Fi and if the network owner gives permission to the new device.

Moreover, when the Wi-Fi network is down due to any failure, BLE may be used for debugging the issues, resetting the network setting, or any other diagnosis or action that needs to be taken when there is a problem.

BLE range is very limited compared to Wi-Fi. Because the dedicated backhaul has a range that can be as high 20× that of BLE, embodiment of the invention can use the dedicated backhaul to propagate the information on all devices. When the device is close to any of the other devices, the device can talk to close devices, and the close device can use the dedicated backhaul to send the information back to main device or any other device that needs diagnosis or any actions.

The dedicated backhaul can also be used to extend range of BLE to different points around the home. For example, an LED light can be controlled using a device better than a traditional access point because any device can receive an LED BLE signal and can repeat back the information using the dedicated backhaul to any other devices or to a cloud backend that controls the LED light. The same is true for any BLE sensor or BLE controlled device.

In embodiments of the invention, the 5 GHz backhaul includes MU-MIMO support. A different 2.4G channel may 20 be used for different units and different 5 GHz client facing channels may be used on different units. Because MU-MIMO requires both sides of the link to have MU-MIMO support and have a good transmit and receive algorithm for MU-MIMO, embodiments of the invention use MU-MIMO 25 between the devices, especially if there is only one base station.

Embodiments of the invention provide auto channel selection (ACS) during initial boot up. The algorithm for this feature scans all of the channels, then collects appropriate 30 statistics, such as interferences (both WLAN and non-WLAN) and assigns weights to each channel.

In FIG. 9, a system ACS starts (600). If ma RSSI>threshold 1 (602) is not true, then the system goes through ACS (604); else the system determines if high- 35 est=11 (606). If so, then the system uses channel 10 (608); else, the system determines if highest=1 (610). If so, then the system uses channel 2 (612); else, the system uses the channel with the highest RSSI (614).

In FIG. 10, a router or bridge determination starts (700). 40 The system boots up the OS on the base unit (702), initiates DHCP, and wait for x seconds (704). If a DHCP server is not available (706), the base unit comes up as an AP (714); else, the base unit comes up as a router (708). If an Internet connection is not available (710), the system indicates a 45 7) For a 40 MHz channel selection, the 20/40 coexistence connection issue (716); else, the system indicates that the Internet is available (712).

In FIG. 11, a star topology boot up starts (800) and the boot up, scan\_count=0 (802). The system scans on all three radios, where scan\_count=scan\_count+1 (804).

If base radios are not detected (806), then scan\_count<scan\_threshold (814), and the system turns move closer indicator on (816).

If base radios are detected (806), and RSSI  $D_{base}$ -threshold  $D_{base}$  (808) is true, then the system associ- 55 ates to a base in the dedicated and 2.4 GHz (810) and uses a dedicated radio as a backhaul (812).

If base radios are detected (806) and RSSI  $D_{base}$ >threshold  $D_{base}$  (808) is false, then if RSSI\_other\_5G base>threshold\_other\_5G (822) is false and RSSI\_other\_2G 60 base>threshold 2G (820) is false, the system turns a move closer indicator on (818).

detected (806) and RSSI If base radios are  $D_{base}$ >threshold  $D_{base}$  (808) is false, then if RSSI\_other\_5G base>threshold other 5G (822) is true, then the system 65 associates to a base in the dedicated and 2.4 GHz band (824) and uses the other 5 GHz radio as a backhaul (826).

If base radios are detected (806) and RSSI  $\mathrm{D}_{base}$ >threshold  $\mathrm{D}_{base}$  (808) is false, then if RSSI\_other\_5G base>threshold\_other\_5G (822) is false and RSSI\_other\_2G base>threshold 2G (820) is true, then the system associates to 2.4 GHz and any other radio (828) and uses 2.4 GHz as the backhaul (830).

Statistic Collection and Algorithm Guidelines.

The following discussion describes the statistics that are collected during a scan and general guidelines on how to use the statistics. The following is a list of items that must be taken into account in embodiments of the invention:

- 1) The number of APs on each channel is counted accurately during the scan. The buffer size is limited for the scan and as a result, when there are many APs, the APs on higher channels do not fit into the limited buffer size. As a result, scanning in 2.4G is broken into at least three separate scans in three subsets of the channel to make sure all APs are seen on all channels.
- 2) Scan time is increased on each channel such that all the APs are seen.
- 3) If one or more APs with an RSSI of -45 dBm or higher are within vicinity, the channel of the AP which has highest RSSI is picked. If the AP is 40 MHz, the same primary channel is picked.
- 4) Interference from neighboring channels is taken into account. The channel with smallest grade is the best.

E=constant which depends on AP RSSI

- If 20 MHz AP is on Z=channel CH, CH-1, CH+1, Grade\_on\_channel\_Z=Grade\_on\_channel\_Z+2\*E
- 20 MHz AP is on Z=CH-2, CH+2. Grade\_on\_channel\_Z=Grade\_on\_channel\_Z+E
- If 40 MHz AP, for both 20 MHz subchannels of the 20 MHz, apply grade calculation as described above.
- 5) The RSSI of APs is taken into account. Grade in the following is the grade on the AP channel and all affected neighboring channels. The following may be used to start for

AP RSSI<-70 dBm⇒E=1 -70 dB<AP RSSI<-40 dB⇒E=1.5 RSSI>-40 dB⇒E=2

- 6) Noise floor on each channel is measured during scan: tmpnoise=(noise\_db<-95)?-95: noise\_db tmpnoise=(noise\_db>=-65)?-65: noise\_db noise\_grade=(tmpnoise+95)/5\*4
- (wl obss coex) is taken into account. If there is no 40 MHz channel available because of coexistence requirement, the best 20 MHz channel is selected.
- 8) Transmit power on each channel is taken into account. Channel 1 and channel 11 shall be avoided in the US and Australia.
- 9) Channel utilization on each channel is measured during scan. Channel utilization includes CCA stats and percentage of the time that the channel is clean.
- 10) Interference statistics on each channel are measured during the scan and may be used.
  - 11) Each unit may take into account the channels that are used by other APs in the network. For example, ACS may decide to use different channels on different units.

Notes

Dynamic Frequency Selection (DFS).

In embodiments of the invention, the backhaul channel in European Telecommunications Standards Group (ETSI) is on the radar band. In an FCC locale, the radar band may be used when the non-radar backhaul channel has interference. If radar shows up, it is necessary to change the backhaul, e.g. moving the channel in coordinated way; and communication

g

of dynamic frequency selection (DFS) detection between different nodes in the mesh network, e.g. using 2.4 GHz, the other 5 GHz, and/or 802.11h. Action frames and/or beacon frames from 802.11h may be extended for use-case of mesh.

When radar shows up, the units use layer 2, 3, or the 5 application layer to notify each other of radar entry and coordinate a backhaul move. This coordination and move must be performed during the time that is allowed by regulatory bodies. The client facing coordinating radios, including 2.4 GHz radio, may be used to communicate and 10 move the backhaul, if backhaul communication coordination can be performed within the time that the regulatory bodies allow before shutting down communication. In this case, the other two radios, which are not dedicated backhaul radios, move to the same channel and start communication to pick 15 a new backhaul. If not, a new backhaul can be chosen, and the two other radios are shared for backhaul and front haul. This not a desired outcome and is done only if no backhaul channel is available due to radar events.

Channel Planning for Client Facing Radios.

In embodiments of the invention, different 2.4 GHz channels are used when 2.4G is not used as backhaul. Changing the channel of the 5 GHz band; and/or changing of the channel is used to avoid congestion. Channel coordination is done to use the cleanest channels among multiple 25 nodes depending on available traffic

Changing Basic Rate Set Per Topology.

In embodiments of the invention the beacon rate is changed to force clients to roam; and/or the management frame rate is changed.

Changing Transmit (TX) Power Per Distance.

In embodiments of the invention maximum transmit power may be dropped on mesh nodes if the mesh node coverage is smaller than what its peak power allows. Transmit power of some management or control frames may be 35 dropped. Transmit power of some certain modulation and or coding may be dropped. Transmit power to some certain client may be dropped

Mobility Control Over Dedicated Backhaul.

In embodiments of the invention data is sent between 40 different modules and used to decide how to roam, when to roam, and send packets to client to roam. Roaming is done based on best effective rate, interference, and type of data.

The AP over which a client is connected is monitoring the client wireless state, as well as the traffic the client sends over Wi-Fi. Once the AP sees any reason for a client to be considered for roaming, it communicates to the other APs and gets information from them on the state of wireless channels that the other APs see. Moreover, the AP queries the client on what the client sees from the network. Once all 50 of the information is gathered, a final decision is made by the AP whether the client is connected to another AP, depending on the network configuration. The decision is communicated over the dedicated backhaul, and then an attempt is made to roam the client. Coordination of roaming, including what time to send a roaming trigger to the client and which AP to respond to after roaming has started, happens over the dedicated backhaul as well.

Bluetooth Mesh/Bluetooth Over Wi-Fi.

Embodiments of the invention extend Bluetooth across 60 home over Wi-Fi or over Bluetooth mesh. The Bluetooth signal may be decoded the bits may be sent over Wi-Fi backhaul to a node which is close to destination and Bluetooth packet may be transmitted at that node.

Computer System 65

FIG. 12 is a block diagram of a computer system as may be used to implement certain features of some of the 10

embodiments. The computer system may be a server computer, a client computer, a personal computer (PC), a user device, a tablet PC, a laptop computer, a personal digital assistant (PDA), a cellular telephone, an iPhone, an iPad, a Blackberry, a processor, a telephone, a web appliance, a network router, switch or bridge, a console, a hand-held console, a (hand-held) gaming device, a music player, any portable, mobile, hand-held device, wearable device, or any machine capable of executing a set of instructions (sequential or otherwise) that specify actions to be taken by that machine.

The computing system 30 may include one or more processors 35; memory 31; input/output devices 32, e.g. keyboard and pointing devices, touch devices, display devices; storage devices 34, e.g. disk drives; and network adapters 33, e.g. network interfaces, that are connected to an interconnect 36. The interconnect 36 is illustrated as an abstraction that represents any one or more separate physical buses, point to point connections, or both connected by appropriate bridges, adapters, or controllers. The interconnect 36, therefore, may include, for example, a system bus, a Peripheral Component Interconnect (PCI) bus or PCI-Express bus, a HyperTransport or industry standard architecture (ISA) bus, a small computer system interface (SCSI) bus, a universal serial bus (USB), IIC (12C) bus, or an Institute of Electrical and Electronics Engineers (IEEE) standard 1394 bus, also called Firewire.

The memory 31 and storage devices 34 arc computer-readable storage media that may store instructions that implement at least portions of the various embodiments. In addition, the data structures and message structures may be stored or transmitted via a data transmission medium, e.g. a signal on a communications link. Various communications links may be used, e.g. the Internet, a local area network, a wide area network, or a point-to-point dial-up connection. Thus, computer readable media can include computer-readable storage media, e.g. non-transitory media, and computer-readable transmission media.

The instructions stored in memory 31 can be implemented as software and/or firmware to program the processor 35 to carry out actions described above. In some embodiments, such software or firmware may be initially provided to the processing system 30 by downloading it from a remote system through the computing system 30, e.g. via network adapter 33.

The various embodiments introduced herein can be implemented by, for example, programmable circuitry, e.g. one or more microprocessors, programmed with software and/or firmware, or entirely in special-purpose hardwired (non-programmable) circuitry, or in a combination of such forms. Special-purpose hardwired circuitry may be in the form of, for example, one or more ASICs, PLDs, FPGAs, etc.

Aithough the invention is described herein with reference to the preferred embodiment, one skilled in the art will readily appreciate that other applications may be substituted for those set forth herein without departing from the spirit and scope of the present invention. Accordingly, the invention should only be limited by the Claims included below.

What is claimed is:

1. A computer-implemented method for establishing a backhaul communication among nodes in a mesh wireless network, the method comprising:

performing an attempt to utilize a first channel in a default frequency band as a backhaul with second node in the network, wherein the backhaul is to provide communication of management functions between the nodes in

the network, as opposed to a front haul that provides wireless data communication to clients in the network; and

upon detecting that a received signal strength of the first channel from the second node is below a threshold, performing an attempt to utilize a different channel in the default frequency band and/or a channel in a different frequency band that has a lower frequency range than the default frequency band, to establish the backhaul with the second node,

wherein, in any of said attempts, channels in a given frequency band are prioritized based on a corresponding received signal strength.

- 2. The method of claim 1, wherein said attempts are performed on a first radio, the method further comprising: 15 upon failure of all said attempts, performing an attempt to establish the backhaul with the second node utilizing a different radio.
- 3. The method of claim 2, wherein said different radio is the same radio as the front haul.
  - 4. The method of claim 1, further comprising:

measuring received signal strengths of probes from all nodes within a communication range; and

selecting the second node based on the measured received signal strengths of the probes.

5. The method of claim 1, further comprising:

utilizing a spanning tree based protocol to avoid loops in said attempts.

6. The method of claim 1, further comprising:

measuring a link quality among one or more of the nodes 30 in the network; and

selectively causing a number of nodes in the network to form a particular connection topology based on the measured link quality.

- 7. The method of claim 6, wherein the formed connection 35 topology is a star topology if the link quality exceeds a predetermined threshold.
- 8. The method of claim 6, wherein the formed connection topology is a daisy chain topology if the link quality does not exceed a predetermined threshold.
  - 9. The method of claim 8, further comprising:

maintaining a hop count for nodes connected in the daisy chain topology, wherein whether a given node can be added to the daisy chain topology as an extra hop is further based on the hop count.

10. The method of claim 1, further comprising: receiving, via the backhaul, a configuration from the second node.

11. The method of claim 10, further comprising:

causing the configuration from the second node to be 50 pushed through the backhaul to a target node, wherein said causing is triggered by an initiation from a user.

12. A network device capable of establishing a backhaul communication among nodes in a mesh wireless network, the device including a network controller configured to 55 perform operations comprising:

performing an attempt to utilize a first channel in a default frequency band as a backhaul with second node in the network, wherein the backhaul is to provide communication of management functions between the nodes in 12

the network, as opposed to a front haul that provides wireless data communication to clients in the network;

upon detecting that a received signal strength of the first channel from the second node is below a threshold, performing an attempt to utilize a different channel in the default frequency band and/or a different frequency band that has a lower frequency range than the default frequency band, to establish the backhaul with the

wherein, in any of said attempts, channels in a given frequency band are prioritized based on a corresponding received signal strength.

- 13. The device of claim 12, wherein said attempts are performed on a first radio, the operations further comprising: upon failure of all said attempts, performing an attempt to establish the backhaul with the second node utilizing a different radio.
- 14. The device of claim 13, wherein said different radio is the same radio as the front haul.
  - 15. The device of claim 12, the operations further comprising:

measuring received signal strengths of probes from all nodes within a communication range; and

selecting the second node based on the measured received signal strengths of the probes.

16. The device of claim 12, the operations further com-

utilizing a spanning tree based protocol to avoid loops in said attempts.

17. The device of claim 12, the operations further comprising

measuring a link quality among one or more of the nodes in the network; and

selectively causing a number of nodes in the network to form a particular connection topology based on the measured link quality.

18. The device of claim 17, wherein the formed connection topology is a star topology if the link quality exceeds a predetermined threshold.

- 19. The device of claim 17, wherein the formed connection topology is a daisy chain topology if the link quality does not exceed a predetermined threshold.
- 20. The device of claim 19, the operations further comprising:
  - maintaining a hop count for nodes connected in the daisy chain topology, wherein whether a given node can be added to the daisy chain topology as an extra hop is further based on the hop count.
- 21. The device of claim 12, the operations further comprising:

receiving, via the backhaul, a configuration from the second node.

22. The device of claim 21, the operations further com-

causing the configuration from the second node to be pushed through the backhaul to a target node, wherein said causing is triggered by an initiation from a user.

## EXHIBIT 8



US 10,292,159 B2

## (12) United States Patent Amini et al.

(10) Patent No.: US 10,292,159 B2 (45) Date of Patent: May 14, 2019

AUTOMATED MESH POINT SURVEY AND GUIDED INSTALLATION FOR A WIRELESS MESH NETWORK (24)

(28)

(71) Applicant: NETGEAR, INC., San Jose, CA (US) (2)

8) Field of Classification Search CPC . Eight. 1244; 1901. 43/088; HOLL 43/08; HOLL 43/16; HOLL 43/08; HOLL 45/08; HOW 40/03; HOW 20/05; HOW 24/06; HOW 40/02; HOW 72/045; HOW 72/045; HOW 72/08; HOW 72/045; HOW 76/15; HOW 44/05; HOW 84/18

See application file for complete search history.

U.S. PATENT DOCUMENTS

7,155,167 B1 \* 12/2006 Carty ... 7,502,354 BI\* 3/2009 Maufer

References Cited

(99)

Inventors: Peiman Amini, Mountain View, CA. (US); Joseph Amalan Arul Emmanuel, Cupcrtino, CA (US)

(73) Assignce: NETGEAR, INC., San Jose, CA (US)

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 64 days. Notice:

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H04W 24/00 455/67.11 H04L 12/413 370/338

(21) Appl. No.: 15/287,678

Oct. 6, 2016

(22) Filed:

US 2017/0135145 A1 May 11, 2017 Prior Publication Data (9)

Related U.S. Application Data

"WLAN High Availability", Technical white paper, Hewlett-Packard Development Company, L.P., Oct. 2014, 8 pages.

OTHER PUBLICATIONS

(Continued)

Assistant Examiner — Kai Chang (74) Attorney, Agent, or Firm — Perkins Coie LLP

ABSTRACT

(57)

Primary Examiner - Asad M Nawaz

Provisional application No. 62/336,503, filled on May 13, 2016, provisional application No. 62/253,540, filed on Nov. 10, 2015.

99

Int. Cl. (51)

(2018.01) (2006.01) (Continued) H04W 4/02 H04L 12/26

Introduced here are techniques to provide automated mesh point survey and guided installation for assisting the installation are assisting the installation and configuration of a wireless mesh network. Additional implementation techniques are also introduced includitional implementation techniques are also introduced includitional implementation techniques are also introduced includitional interpretation techniques are also interpretation techniques are also interpretation and also interpretation are also

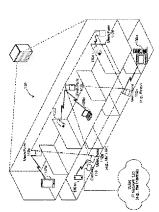
ing, for example, link rate estimation, roaming, and dedicated backbaul link implementation in such wireless

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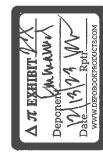
mosh network, are also discussed. Among other benefits, it is disclosure provides an integral solution where multiple wriefers local area network (WLAN) mesh point devices are deployed in a relatively large environment with potential dead spots, such as a home or an office.

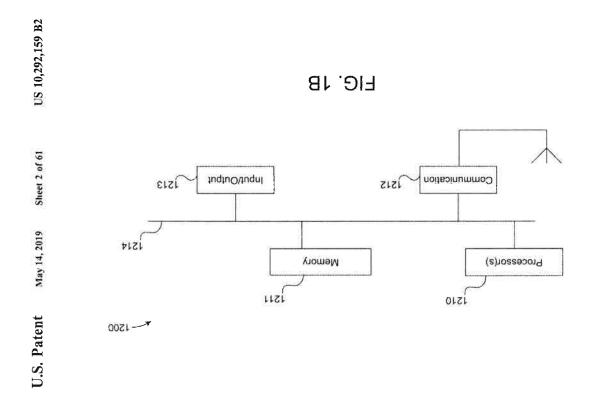
21 Claims, 61 Drawing Sheets

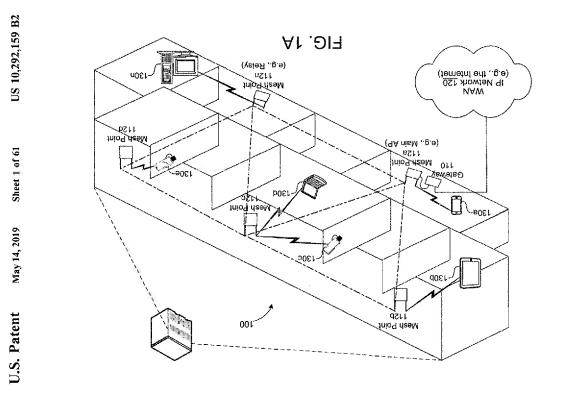


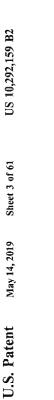


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U.S. Patent



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## 1. Install the Base Orbi



2. Install the other Orbis



3. Test your new Wifi!



FIG. 2

# 1. Install the Base Orbi

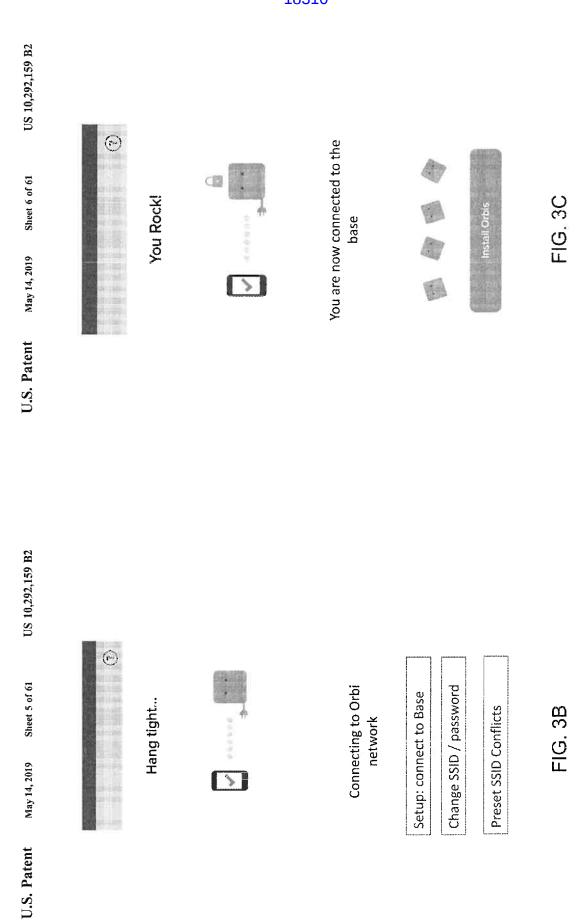
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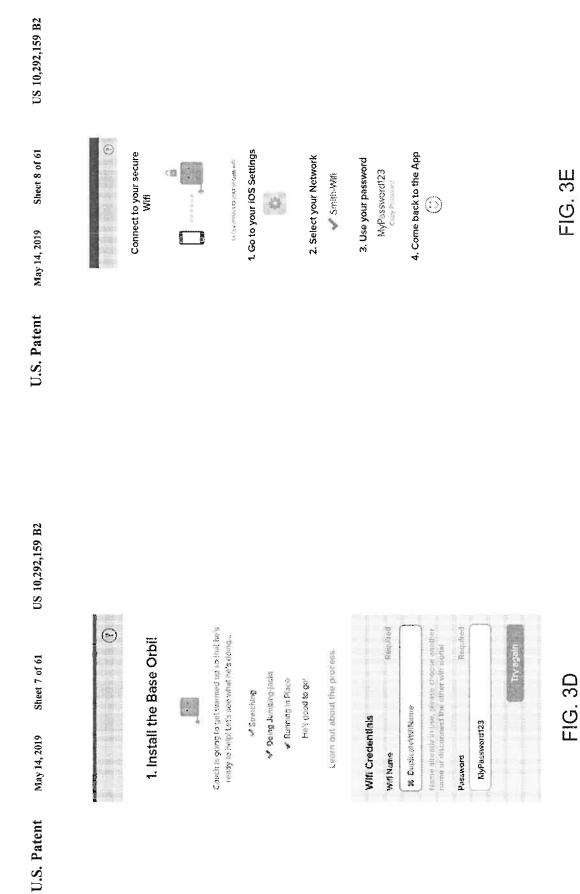


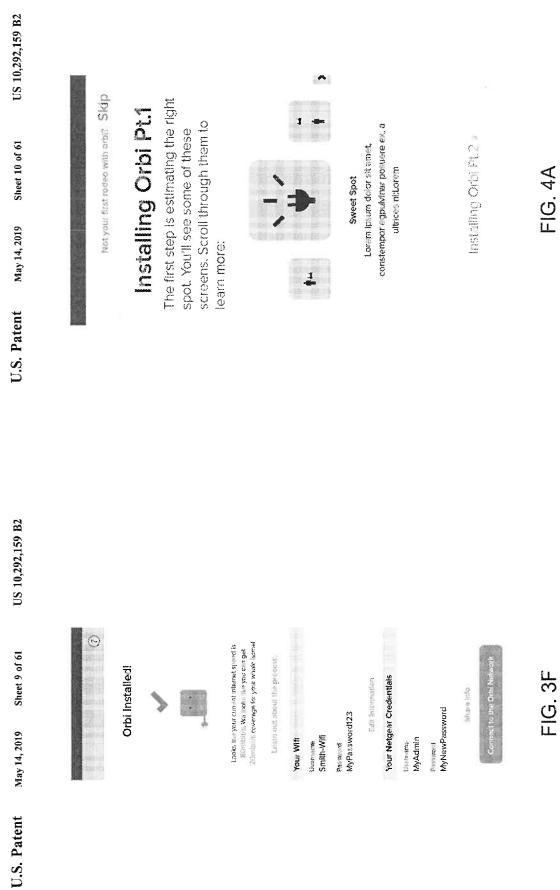
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FIG. 3A







Newscartering Skip

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Installing Orbi Pt.2

Not your first redec with orbit Skip

Wifi Testing

### The socord step when installing is to make sure the orbi is in the right spot. You'll see one of these confirmation streens:

Los et l'um donn : remed. constemn prignime pouce est e uttro : est a : Great Work!







### constempor egpulvinar posuere Lorem ipsum dolor sit amet, ex, a ultrices ni:









Lorem ipsum dolor sit imet, constempor egoulviner

Bad Wiff

Loram ipaum dolor sit alnet constempor egouivenar Great With

Check out the Interiors

8 9 3

FIG. 4C

FIG. 4B

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# Almost Ready to Install!

Orbi works best if you know where you have bad wiff in your house. We reccomend that you survey your house first. Your base Orbi may have extended your previous signal.



If you have a good idea of where you're having bad wiff, you can get to installing right away.

Skip Wifi Survey

FIG. 5A



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# You have great wifi here!



Run Speed Test

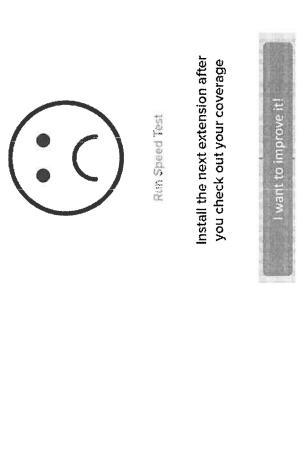
Install the next extension after you check out your coverage

FIG. 5B



Testing (?)
You have ok wifi here!

You have bad wifi here!



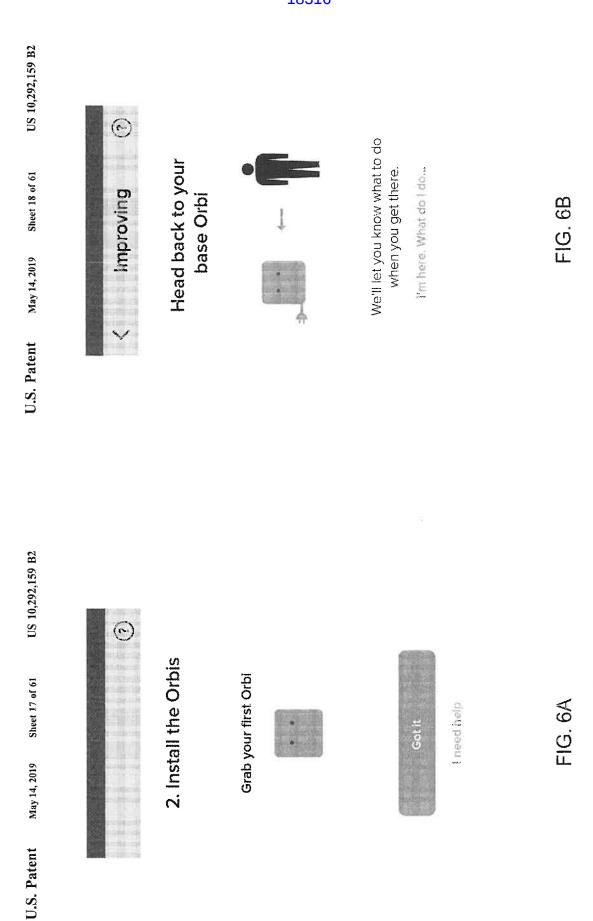


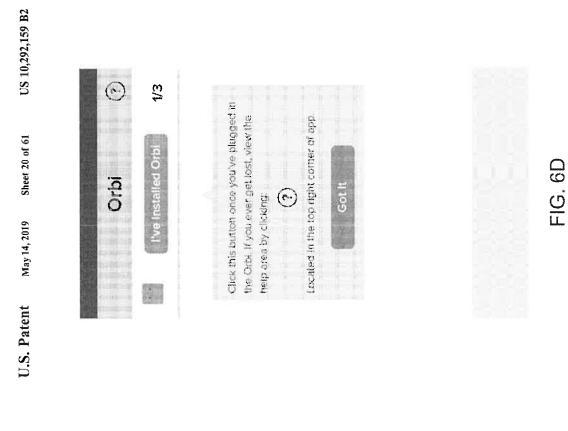
Install the next extension after

Run Speed Test

FIG. 5C

FIG. 5D





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(e)

Orbi

Not your first rades with orbit Skip

FIG. 60

In the install mode, walk away from the base Orbi while holding your mobile

device.

Watch Video



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U.S. Patent



You're too close to the Base! Move farther away from It.



FIG. 7A

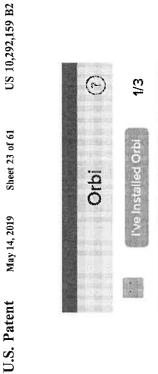
FIG. 6E

Wiff Test

Install

during the installation process! Let's it to You can switch between these modes

installing.





0

Orbi

1/3

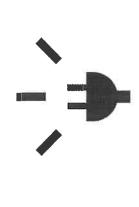
Find the closest outlet to install!

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Bill and the Base will be the perfect distance if you plug him in now!

> Keep moving farther away from it to get You're still a little too close to the Basel

the best configuration.

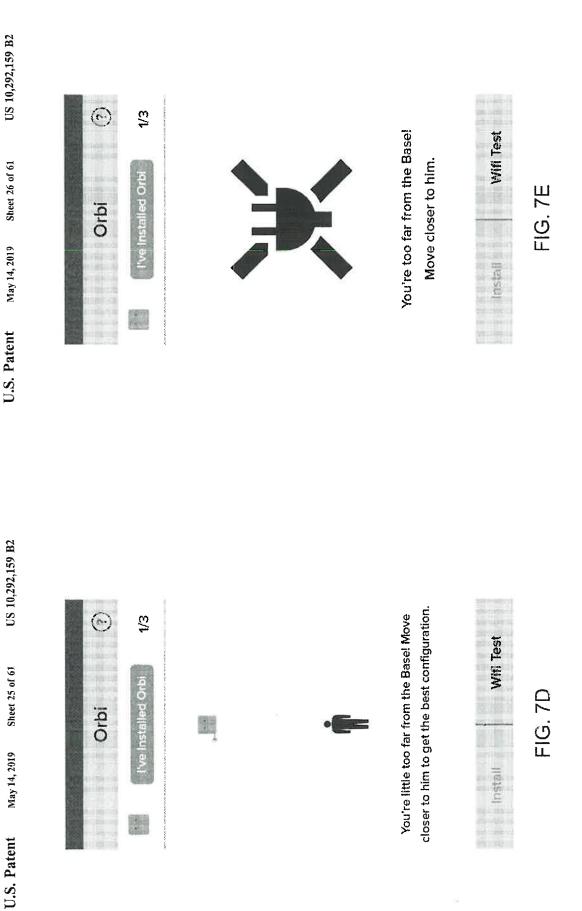


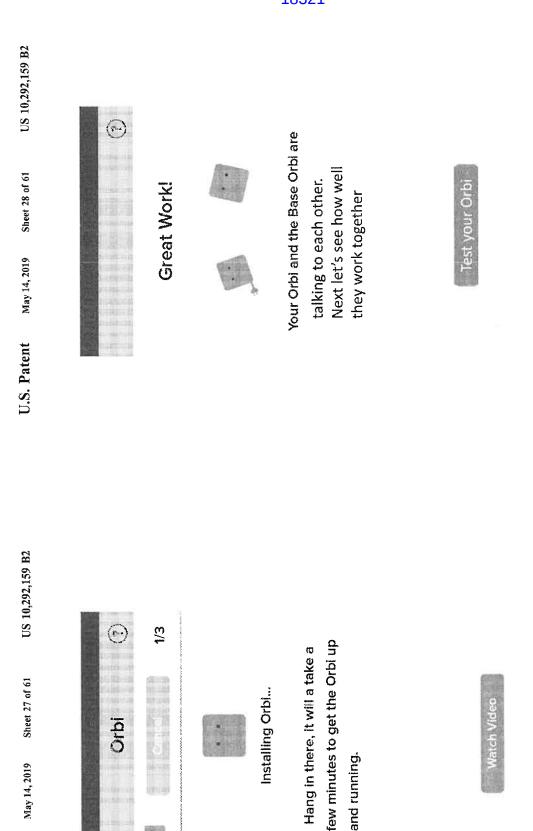
FIG. 7C

FIG. 7B

Wifi Test

Install





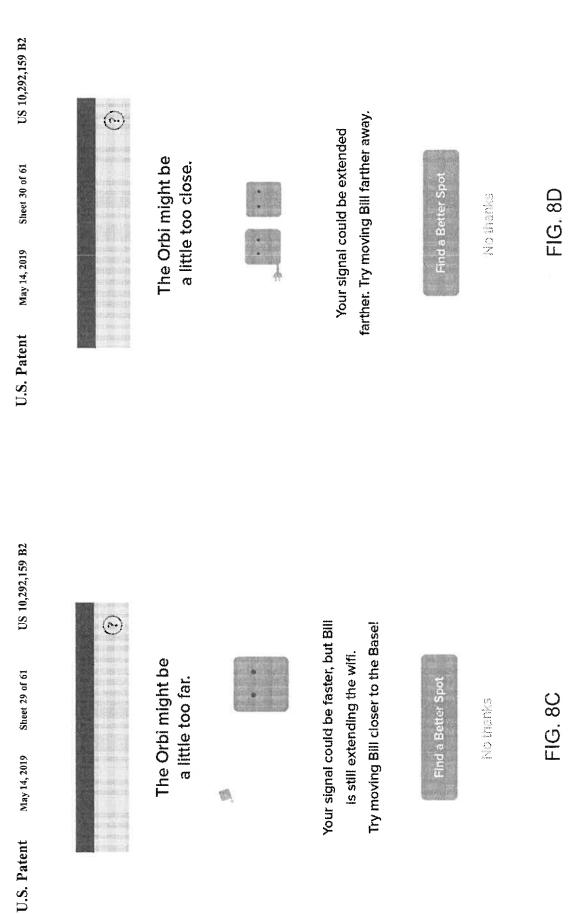
May 14, 2019

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and running.

FIG. 8A

FIG. 8B







Great Work!

(

Unplug the Orbí and plug it into the next closest outlet let us know when he's plugged back in.

Now, let's make sure you've

eliminated that dead spot.

Test Your Wifi!

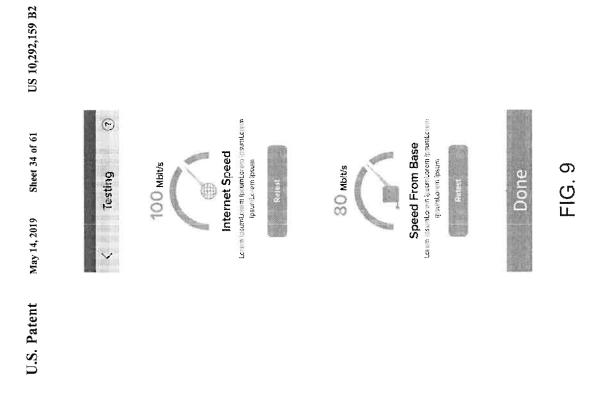
You moved the Orbi in to a

better spot. You rock.



FIG. 8F

FIG. 8E



thought! In fact, it's worse than the first spot. Let's move it back

to the first location and keep

moving forward!

This spot isn't as good as we

UH OH!

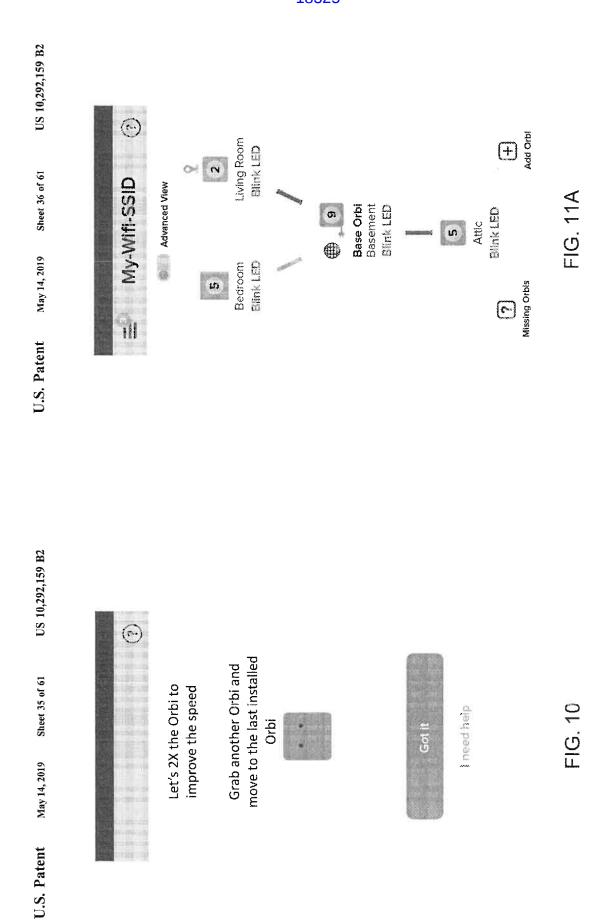
US 10,292,159 B2

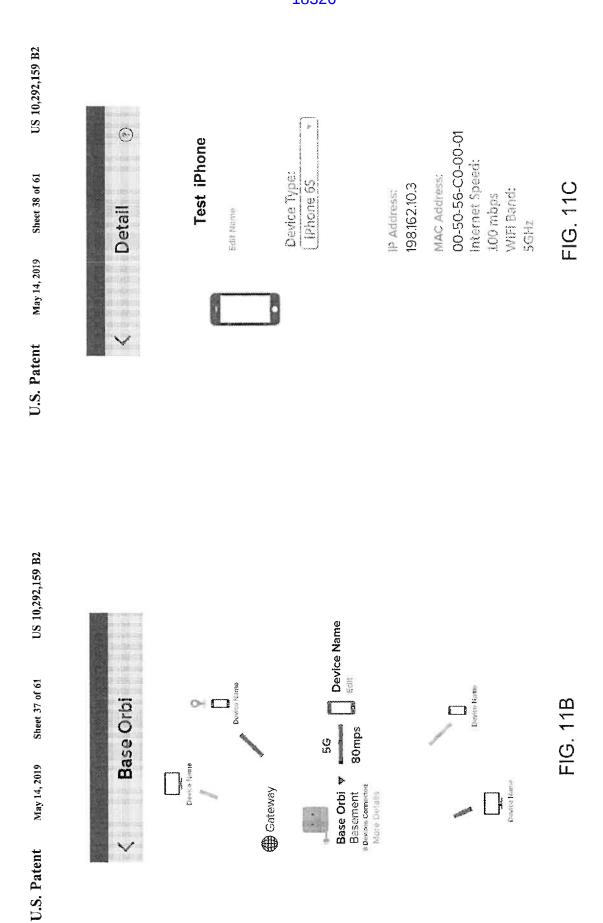
Sheet 33 of 61

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FIG. 8G





2,458 2.463

2.442

2.431

8 9 10

2.452 2.457 2.462

2.441 2.451 2.451

2.473

2.453

2.437

9

2,432

2.421

4 10

2.438

2.427

2.411

2.422

2.433

2.417

2.406

Frequency Frequency 2.401 2.412 2.423

Upper

Center

Lower

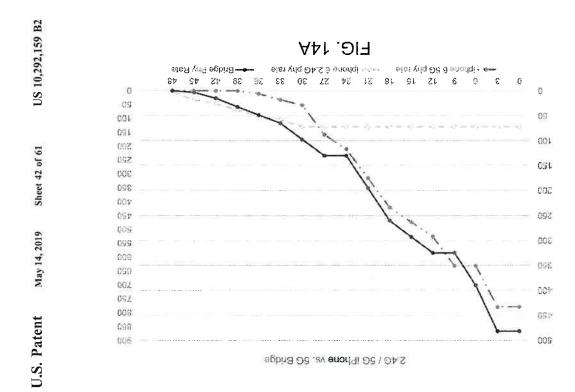
Channel

U.S. Patent

Apple iPhone 5S	Device type 11n 1x1	
Apple iPhone 6	11ac 1x1	
Apple iPhone 6S	11ac 2x2	
Samsung Galaxy S4	11n 1x1	
Samsung Galaxy S5 LTE-A	11ac 2x2	
Samsung Galaxy S6	11ac 2x2	
Apple iPad Air 2 11ac 2x2	11ac 2x2	

FIG. 13A

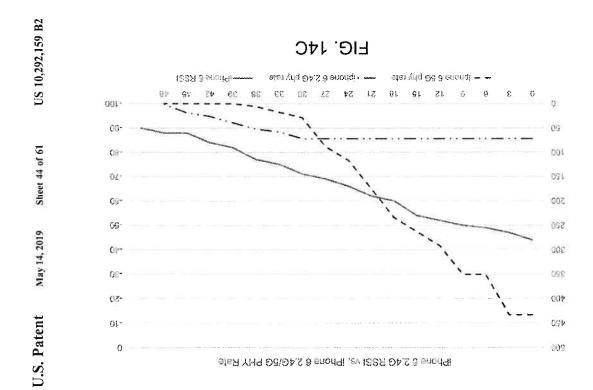
FIG. 12

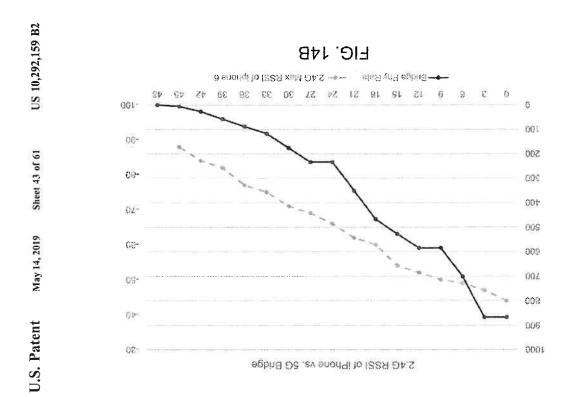


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FREQUENCY MHZ NORTH AMERICA (FCC)	<b>,</b>	7	7	>	DFS	No Access	No Access	No Access	DFS	DFS	DFS	•	7	١	>	,								
FREQUENCY MHZ	5180	5200	5220	5240	5260	5280	5300	5320	2200	5520	5540	5560	5580	2600	5620	5640	5660	5680	5700	5745	5765	5785	5805	5825
CHANNEL NUMBER	36	40	44	48	52	56	09	64	100	104	108	112	116	120	124	128	132	136	140	149	153	157	161	165





175.5

18-QAM

- N 0 4 10 0 N

16-QAM

263.3 234.0

64-QAM

64-QAM

64-QAM

292.5

256-QAM

256-QAM

FIG. 15B

LGI PHY rate (Mbps)

NSS

Modulation

BPSK

QPSK

5G 80MHz 1x1 Rates

5G 80MHz 2x2 Rates

29.3 58.5

QPSK

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SOU	Modulation NSS	SSN	LGI PHY rate(Mbps)
	BPSK	2	58.5
	QPSK	2	117
0.1	QPSK	2	175.5
~	16-QAM	2	234
	16-QAM	2	351
10	64-QAM	2	468
9	64-QAM	2	526.5
_	64-QAM	0	585
œ	256-QAM	2	702
on.	256-OAM	2	780

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2.4G 20MHz 2x2 Rates

ate(Mbps)								
LGI PHY rate(Mbps)	13	56	99	52	282	104	117	130
NSS	2	2	2	2	2	2	2	2
Modulation NSS	BPSK	QPSK	QPSK	16-QAM	16-QAM	64-QAM	64-QAM	64-QAM
MCS	0	_	N	က	4	5	<sub>Q</sub>	7

2.4G 20MHz 1x1 Rates

LGI PHY rate(Mbps)	6.5	13	19.5	26	88	52	58.5	65
NSS		-			1 1000 5	ļ		-
Modulation NSS	BPSK	QPSK	OPSK	16-QAM	16-QAM	64-QAM	64-QAM	64-QAM
MCS	0	-	2	ဗ	4	S	မွ	

FIG. 15D

FIG. 15C

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TPUT (mbps)	> 180	140-180	120-140	80-120	< 80
Instruction	Too close	A bit close	Good	A bit far	Too far

Example Instruction Mapping for Link-Orbi-5G

FIG. 16

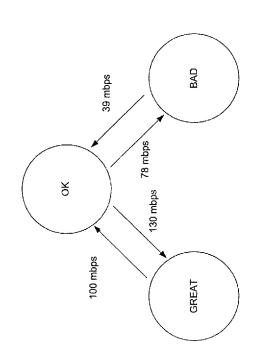
FIG.

erage	TPUT (mbps)
Good	> 30
Ok	10-30
Bad	< 10

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Device	802.11v	802.11k	802.11r
Phone 6s	Yes	Yes	sед
Phone 6s Plus	Yes	Yes	Yes
Phone 6	Yes	Yes	Yes
Phone 6 Plus	Yes	Yes	Yes
Phone 5s	Yes	Yes	Yes
Phone 5c	Yes	Yes	Yes
Pad Air	Yes	yes.	Yes
Pad Air 2	Yes	Yes	Yes
Pad Mini 3	Yes	Yes	Yes
Pad Mini 2 Retina	Yes	Yes	Yes

:IG. 18A



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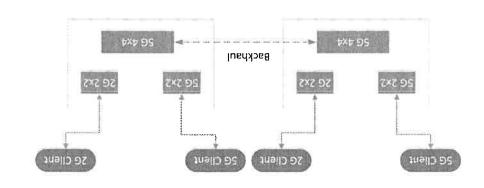
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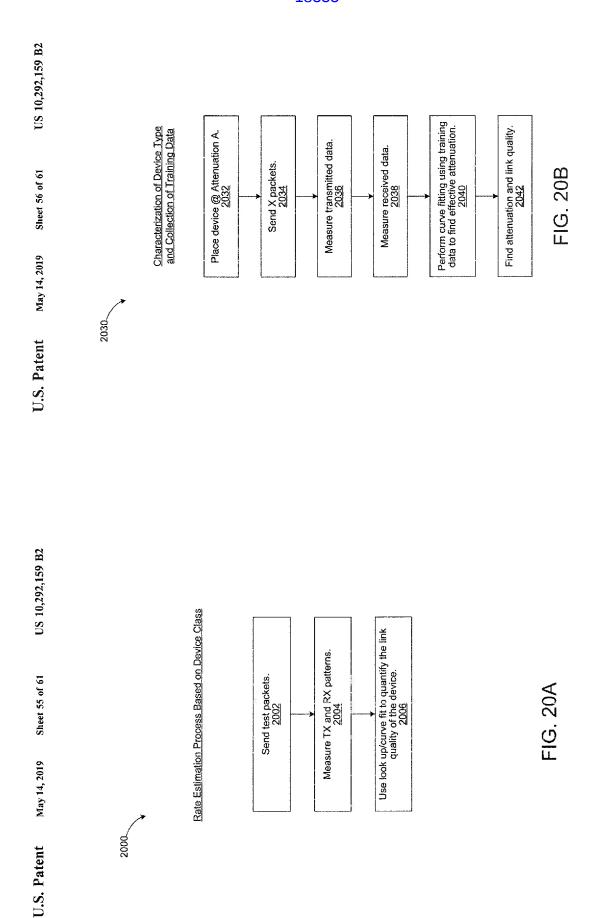
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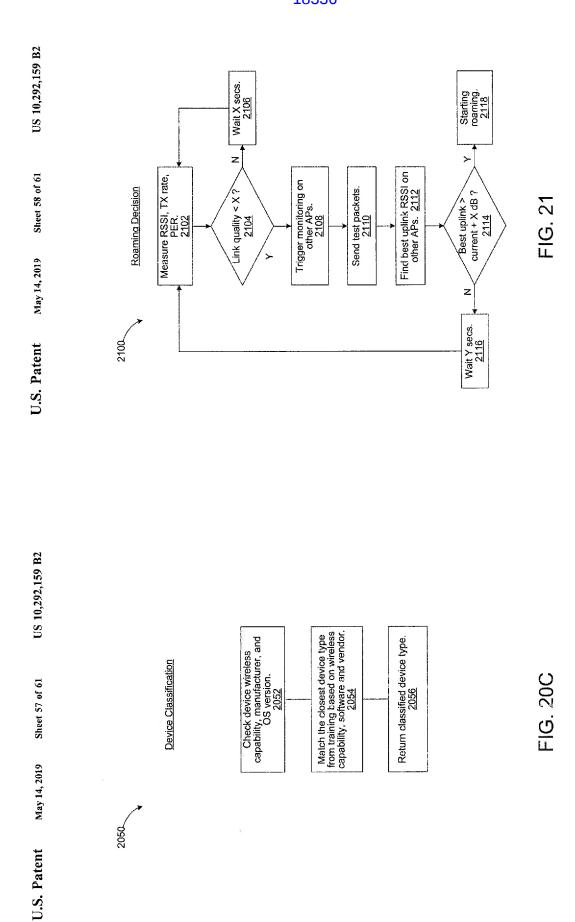
FIG. 19

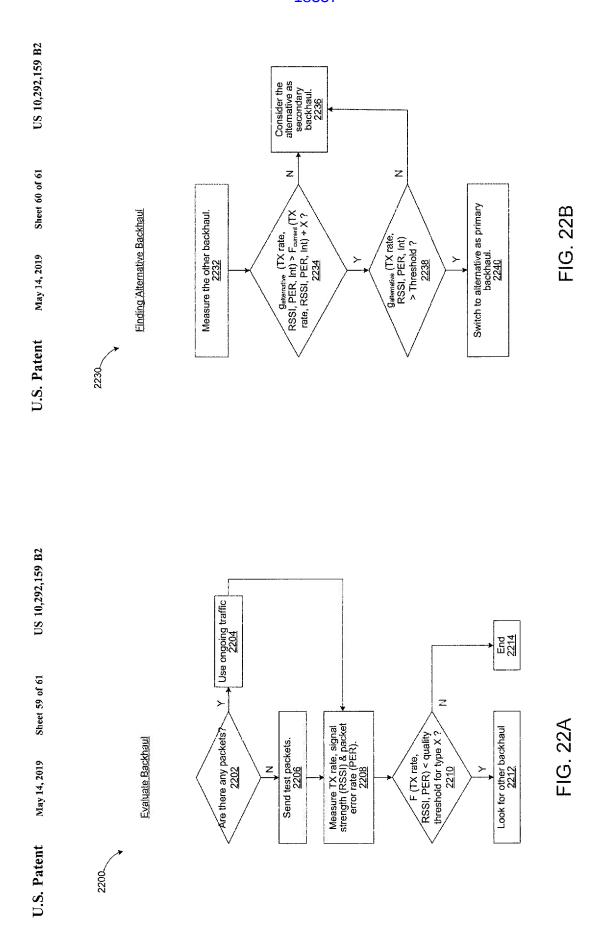


Device	802.11v	802.11k	802.11r
Galaxy s6	o <sub>N</sub>	Yes	Yes
Galaxy s5	oN N	Yes	Yes
Galaxy s4	No	Yes	Yes
HTC One	Yes	Yes	Yes

FIG. 18B







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# AUTOMATED MESH POINT SURVEY AND GUIDED INSTALLATION FOR A WIRELESS

### COPYRIGHT NOTICE

The copyright owner has no objection to the facsimile reportation by anyone of the peneta decument or the parent disclosure, as it appears in the Paton and Trademat Office patent file or records, but otherwise reserves all copyright A portion of the disclosure of this patent document contains material which is subject to copyright protection rights whatsoever.

WHOLE HOME WI-FI COVERAGE", filed Nov. 10, 2015; the accompanying drawing.

The accompanying drawing.

FIG. 1A is a representative wireless mesh actwork carviremitled "DEDICATED BACKHAUL FOR WHOLE.

HOME COVERAGE", filed May 13, 2016; all of which are 3s mented.

Switch to alternative

z

All alternative < X ?

2256

Evaluate using client facing

resource to become

backhaul. 2260

backhaul.

Use current backhaut.

Z

Jurrent backhaul < X >

2252

Backhaul Hierarchy

2250

2016, and U.S. patent application Ser. No. 157271,912, enritled "DEDICA/IED BACKHA/UL FOR WHOLE HOME COVERAGE", filed Sep. 21, 2016; all of which are breesy incorporated by reference in their entireties.

In an indoor environment such as a large house or an office, a single access point (AP) often may not be able to cover the entire indoor area.

increase the transmission power. However, solely relying on transmission power on the AP would be a mesh network.

Procease the transmission power on the AP would be a mesh network.

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Procease the transmission power and the AP would be a mesh network.

Procease the transmission power and the AP would be a mesh network.

Procease the transmission power and the AP would be a mesh network.

Procease the transmission power and the AP and a client is highly asymmetrical that the AP and a client is the AP and a itionally is also lower than the AP. Moreover, a portable (6) tess most proved.

client (e.g., a mobili photo-o) often is man harden by a second of the signal absorption and disruption by the human body, signals from such portable elient may reach the frequencies of different Wireless LAN (WLAN) of AP at even lower powers. Yet, many commondy used IMAN a typical 2.4 GHz frequency band.

Proposols require cach side of the link or neceivo an acknowl- (8) FIG. 138 is a hable illustrating example frequency. One straightforward attempt to solve the problem is to

# MESH NETWORK

## CROSS-REFERENCE TO RELATED APPLICATIONS

This application is entitled to the benefit of and the right of priority to U.S. Provisional Patent Application No. 62/253,540, entitled "METHOD AND APPARATUS FOR

Leady incorporated by reference in their entireties.

This application is related to ex-pending U.S. patent may application Ser. No. 15287/204, entitled "HATE BETIMA-TION IN A WIRELESS MESH NITTWORK", filed Oct. 6, 12016. L.S. patent papietion Ser. No. 15287/106, entitled "WOAMING IN A WIRELESS MESH NETWORK", filed in "ROAMING IN A WIRELESS MESH NETWORK", filed in Oct. 6, 2016. U.S. patent application Ser. No. 15287/711.

For integrating the papietion Ser. No. 15287/711.

For integrating the papietion of the paper of th 35

### TECHNICAL FIELD

The present disclosure relates generally to electronic communications, and more specifically, to techniques for implementing a local area wireless mesh network.

### BACKGROUND

facing resource as backhaul. Switch to client

z

Client facing < Z ?

2262

edgement (ACK) for the packets that are transmitted (e.g., in a downlink direction). If one side of the WLAN lirk cannot

FIG. 22C

Indicate bad backhaul on the software application. 2266

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receive from the other side of the link, no packet can be transmitted to the other side of the link.

Instead of one AP with high transmission power and high

"mesh points." When a client device establishes connection with one of the mesh points, the mesh points can forward the 10 traffic to the mesh point that is connected to the gateway, which in turn communicates the teaffic to the outside world (e.g., wide area network (WAN) and/or "the Internet"). However, there are also many challenges associated with performance antennas, an attractive alternative is using a multitude of smaller APs that are deployed in the environment in a scattered, distributed manner. These smaller APs implementing these wireless mesh networks, especially in a 15 henc environment where a layman user may be involved in form a wireless mesh network, and therefore are also called installing and configuring these mesh points.

# BRIEF DESCRIPTION OF THE DRAWINGS

The present embodiments are illustrated by way of example and are not intended to be limited by the figures of the accompanying drawings. PIG, LA is a representative wireless mest network envi-ខ្ព

FIG. 1B is a block diagram of a computing device that may be used to implement the techniques introduced here. FIG. 2 is an example user interface illustrating a welcome

page outlining the general functionalities of a mobile soft-ware application that implements one or more techniques introduced here.

FIGS. 34.3F are example user interfaces illustrating processes for assisting a user in installing the first, main mesh point in a wireless mesh network.

35 FIGS. 44.4C are example user interfaces illustrating introducing processes for assisting a user in installing additional mesh points in the wireless mesh network.

FIGS. 54.5D are example user interfaces illustrating the strategies are interfaces illustrating the serior interfaces illustrating.

processes for assisting a user in finding weak reception sport 40 (or "dead spots) for potential locations to install additional

mesh points. FIGS. 6A-6E are example user interfaces illustrating further introductory processes for assisting a user in installing additional mesh points in the wireless mesh network. FIGS. 7A-7E are example user interfaces illustrating

guiding instructions for assisting a user in installing addi-ticual mesh points in the wireless mesh network. FIGS. 84-8G are example user interfaces illustrating diagnostic processes of installed mesh points in the wireless 45

FIG. 9 is an example user interface illustrating another 50 mesh network.

FIG. 13A is a table illustrating the upper, center, and lower frequencies of different Wireless LAN (WLAN) channels in

a typical 2.4 GHz frequency band. Telf. 188 is a table librating example frequencies of efficient Wireless LAN (WLAN) channels available (e.g., in the United States) in a typical 5 GHz frequency band.

FIG. 14A-14C are different statistical data gathered for mapping the performance of a particular type of device to the anticipated performance of an additional mesh point, if

FIGS. 15A-15D are example tables of closest PHY rates 5

that can be used for throughput estimation.

1916. It is an example theld for mapping between estimated link rate (throughput) and user instruction, for mesh properating in a particular frequency band.

1910. 17A is an example table for mapping between 10 estimated link rate (throughput) and wireless network cov-

erage. FIG. 17B is an alternative example that implements a hysteresis mechanism for mapping between estimated link

rate and wireless network coverage.

FJGS. 18A-18B are a list of known user devices with their capabilities to follow or otherwise coordinate with the mesh

network in performing intelligent roaming. FIG. 19 illustrate an example diagram showing a hackhaul link established between two mesh points (e.g., in the

ods for performing rate estimation, device characterization, and device classification in a mosh network disclosed becein. FIG. 21 is an example flow chart illustrating a method for performing notating decision in a mash network disclosed. mesh network). FIGS. 20A-200 are example flow charts illustrating methFIGS. 12.A. 22C are example flow charts illustrating methods for performing switching and selection of delicated backball in a mesh network disclosed herein.

Like reference numerals refer to corresponding parts throughout the figures and specification.

## DETAILED DESCRIPTION

is a wireless messa pour ter in a scattered, distributed manner. These smaller APs (or mesh points) are often 40 present disclosure. Also, in the following description and for Generally speaking, as mentioned above, a better alternative to an access point (AP) with large transmission power is a wireless mesh network with a multitude of smaller APs, marketed as so-called "range extenders" or "repeaters." A range settender generally works by associating itself to a user's main AP and receiving internet connection from the main AP. Then, clients such as mobile phones, laptops and

However, there are also many challenges associated with implementing wireless mech networks with these range extenders, especially in a home environment where a lay mean tax more invivoled in instilling and configuring hees 9 components or circuits. Any of the signals provided over devices. One common problem with the installation process involving layman users is that users may not be able 10 with other signals and provided over one or more common install liths mesh points in their best locations, for termine, because the users du not know where to put each one of the common problem with the installation process with other signals and provided over one or more common install liths mesh points in their devices, common problem with the installation process with other signals and provided over one or more common install that mesh points in their devices, common installation process with other signals and provided over one or more common the carried over the common installation process. In the common installation process with other signals and provided over one or more common the common problem with the installation process with other signals and provided over one or more common transplantation and know where to put each one of the means of single to cover particular dead rapus (i.e., ionations with poor 1 signal lines, fool of the biness may alternate the installation process.) efficiency and stability of such network. For example, roam- 65 ing between the main AP and repeater can be a common issue where the clients may be stuck in connection with the i designed separately (and much like an afforthought) from the main AP, and therefore generally do not have much coordination with the main AP. In many of these conven-tional sertings, it's up no the connection clientro decide whan happens (e.g., what action or reaction to take when a certain e of issues takes place, such as poor reception) in the reless mesh network, which may adversely affect the

network, or that the extender may not use the best band to forward the traffic when extender is connected to two or more bands on the main AP. put. All too often, roaming between multiple range extenders and the main AP may not function as designed, and different roaming methods may be required for different types of clients. Other common issues include that the extender may not use the best band(s) to connect to the rest of the mesh main AP or a repeater mesh point and may not roam to the mesh point that can provide the clients with the best through-

Introduced here, accordingly, are techniques to provide automated mesh point survey and guided installation for assisting the installation and configuration of a wireless roaming, and dedicated hackbaul link implementation in such wireless mesh network, are also discussed. Annong other barefits, this disclosure provides an integral solution 20 where multiple wireless local area network (WLAM) mesh point devices are deployed in a relatively large environment can aid the user in installation, can aid user to vorify that installation is successful, and can aid user in upgading an existing vireless mesh network. In some examples, the multiple device wireless mesh network may have a network the network controller can decide, for example, with which mesh point each client should associate, when a client should room, which topology the network should be using with which hand should the client associate, which band with potential dead spots, such as a home or an office. As is introduced in more details below, one or more embodiments should be used for the traffic forwarding, and where to install 35 a new mesh point to provide more coverage in the target 15 mesh retwork. Additional implementation techniques are also introduced including, for example, rate estimation, control system, which may be centralized or distributed, and 8 25

purposes of explanation, specific nomenclature is set forth to provide a thorough understanding of the present embodiuser's main AP and receiving Internet connection from the ments. However, it will be apparent to one skilled in the art damin AP. Then, clients such as mobile piones, laptops and that these specific details may not be required to practice the damin that are associate to the 4g present embodiments. In other instances, well-known circuits and devices are shown in block diagram form to avoid area. In the following description, numerous specific details are

60 The present embodiments are not to be construed as limited to specific examples described herein but rather to include one or more of a myriad of physical or logical mechanisms for communication (e.g., a network) between components. within their scope all embodiments defined by the appended

System Overview FIG. 1A is a representative wireless

FIG. 1A is a representative wireless mess network environment 100 within which some embodiments may be implemented. The environment 100 includes a gateway 110,

110n can be any suitable computing or mobile devices including, for example, samethouses, table computers, lap-toys, personal digital assistants (PDAs), or the like. Client devices 1340-130n typically include a display, and may is include simble input devices (tot shower for simplicity) such as a steepbeard, a mouses, or a touchead, in some embediments, the display may be a touch-acustifive screen the devices 1340-1340 can include newbrolamidies. Additional examples of the devices 1340-1340 can include nework-connected term. So east (or "IP cameras"), home sensors, and other home appliances (e.g., a "smart refigerator" that can comect to the Internet). stillable type of connection network. Its some embodiments, is the base station I lot and the envevir 120 may be connected wirelessly (e.g., which may hielded employing a data fuffic network based on wireless telephony services such as 3G, 3.G, 4G LIFE and the IReo.

The main mesh point 132a, which is illustrated as oper 20 esting: "main access point (AF)" mode, is coupled together with the network 120 so that main mesh point 112a ean enable, either directly or through the additional mesh points. 2 S home or small office environment, the gateway device 110, such as a digital subscriber line (DSL) rotate or cable router that connects the local area network (LAN) (e.g., the network established by mash points 1124-1120, to the internet 10 (e.g., network 120) acts as the default gateway for all network devices. For example, the gateway 110 and the network 120 may be connected via a twisted pair cobing network, a next solic network, a stock solic network as stock solic network. 9 15 The gateway, 110 can be a default gateway, which in computer networking sense, is the noce that is assumed to know how to forward packets on to other networks. In a a main mesh point 112a, a number of additional mesh points (12b-112n, a wide area network (WAN) 120, and a plurality

It is mostly that one of ordinary skill in the art will understand that the compounts of FG. I are just one implementation of the computer network environment within which present embodiments may be implemented, and the various alternative embodiments are within the scope of the present embodiments. For example, the environnent 100 may further include intervening devices (e.g., switches, routers, hins, etc.) among the mesh points 112a-112a, the network 120, and the client devices 130a-130n. In 25 30 112b-112n, the client devices 130c-130n to exchange data to and from the mervork 120. The technologies supporting the communications between the gateway 110 and the main most point 112a may include Efficence (e.g., as described in IEEE 802.3 family of sandards) and/or other suitable types

to the examples, the network L20 comprises the internet.

With the environment introduced above in mind, various nechanical for implementing automated mesh point survey, and guided installation are described in more detail below, in with common of recent or to the channers in 176. I. Also, for purposes of discussion hearin, one or more devices in the purality of mesh points 112-112a, nor the mesh network formed by the mesh points 112-112a, nor the mesh network of the character of the control of the character of the control of the character of t The additional mesh points are status of press of area network technologies.

The additional mesh points 1124-1120 connect to the no smain mesh point 1124-1120 connect to the no or more wireless network communication technologies, such as WLAN (e.g., WFF.), Bloncool, etc. The IEEE 802.11 standards are a set of WLAN technology specifications commonly seen for implementing wireless local urea nee 15 work (WLAN) computer communication. Examples of different wireless communication protocols in the IEEE 802.11 family of smahades can include IEEE 802.11 at IEEE 802.11 in IEEE tion with one of the mesh points 112b-112h, the mesh points 112b-112a an indoward the traffic no the mesh point 112a that is connected to the gateway 110, which in turn communicates the Iraffic to the outside world (e.g., wide area network

Although not shown for simplicity, the mesh points 1124. Although not shown for simplicity, the mesh points 1124. The variable may be application-specific integrated circuity that provides arithmetic and control functions to implement the exchinentist affects between to soft of the mesh points 1124-1134. The processor(s) may include an each memory (tot shown for simplicity) as well as other memory such as a hard-disk drive or soild-state drive. In commencing such as a hard-disk drive or soild-state drive. In commency such as a hard-disk drive or soild-state drive. In commency such as a hard-disk drive or soild-state drive. In commencing the memory is implemented using DRAM, and not not not may may be implemented using pleAM, and made not-volatile memory is implemented using pleAM, and made not not mean magnitude of the drive of the mental or the mental or the mental or the mental to the mental or th memory chips or modules, and the processor(s) on the mesh points 112a-112n may execute a plurality of instructions or strongers codes that are stored in its memory. The client devices 130a-130n can connect to and com-WAN) 120 and/or "the Internet").

municate with the mesh points 112a-112n wirelessly including, for example, using the IEEE 802.1 If Emily of standards (e.g. Wireless L-AN), and can include any suitable intervening wireless network devices including, for example, base

processor(s) 1210 to execute operations in accordance with

stations, routers, gateways, hubs, or the like. Depending on the embodinens, the network technology connecting between the client devices 1300-130s and the mesh points 1120-131s, can include other suitable wireless standards such as the well-known Bluetooth communication protocols or near field communication (NFC) protocols. In some embodiments, the network technology between the devices 130a-130a and the mesh points 112a-111a rean include a custom-ized version of WLAN, Bluetouth, or customized versions of other suitable wireless technologies. Clein devices 130a-

includes one or more processors 1210, memory 1211, a communication device 1112, and one or more input/online includes one or more processors 1210, memory 1211, a communication device 1121, and one or more input/online increases 1213, all coupled to each other through an inferconnect 1214. The interconnect 1214 may be or may include one or more conductive there is base, point-to-point councerions, controllers, daphers and/or other conventional connection devices. The processor() 1210 may be or may so nonnection devices. The processors, microconnectivers, application specific integrated crismic (ASICs) programmable gate arrays, or the like, or a combination of such devices. The processor(s) 1210 council of the conputing device 1200. Memory 1211 may be or may include one or more physical storage devices, which may be in the form of random access memory (RAM), read-only memory (ROM) (which may be crasable and programmable), flash memory, miniature hard disk drive, or other suitable type of In the illustrated embodiment, the computing system 1200 storage device, or a combination of such devices. Memory 1211 may store data and instructions that configure the 55

'n the techniques described above. The communication device 1212 may be or may include, for example, an Ethernet adapter, cable modem, Wi-Fi adapter, cellular transceiver, Bluetooth transceiver, or the like. Depending on the specific nature and purpose of the processing device 1200, the I/O devices 1213 can include devices such as a display (which

15 10 20 may be a touch screen display), audio speaker, keyboard, mouse or other pointing device, microphoric, eamer, ec. Automated Mesh Point Survey and Guided Installation. As previously mentioned, it is generally hard to cover a relatively large area using a single AP. A multiple AP solution (i.e., a wireless mesh network) to cover the whole Internet speed or other services through the deployed environment, the user needs to know where to install the mesh points, and the user needs to verify that the current mesh challenges. Among them, the user needs to find the dead spots, the user needs to know what kind of wireless coverage nstallation is providing the coverage needed around the area is an attractive alternative, but there are also many (e.g., signal strength, throughput (TPUT), goodput (or application-level throughput)) is capable to carry at least the

home and as an additional option, to receive suggestions on home, and as an additional option, to receive suggestions on home and as an additional option, to receive suggestions on how to improve the wireless coverage within the capability of assisting the user throughout the site with the capability of assisting the user throughout the site with the capability of assisting the user throughout the site with the capability of assisting the user throughout the site with the capability of assisting the user throughout the site with the capability of assisting the user throughout the site with the capability of assisting the user throughout the site with the capability of assisting the user throughout the site with the capability of assisting the user throughout the site with the capability of assisting the user throughout the site with the capability of assisting the user throughout the site of the application can assist the user to write with the capability of assisting the user throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and guide the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional throughout the site of the application and an additional through the additional through the additional through the additional throughout the site of the addition the additional mesh points to increase the coverage to reduce or eliminate the deed spous. The application can varify whether the installation is a good one (e.g., functioning a properly and achieving a target transmission ratie), and if not, provide feedbases to the user accordingly. Afterwards, the application can perform an Internet speed test, and can allow the user to walk around to perform coverage surveys to

- such as service set identifier (SSID), password,
- and other attributes of mesh network, using Bluetooth, and/or other setting up the configurations of the mesh network,
- during and/or after the installation of mesh points. (5) guiding the installation of mesh provide the target wireless coverage; and

Note that the type and capabilities of the user's device can include what type of device it is (e.g. Apple iPhone 6STM, Samsung Galaxy S6TM, and/or any other related information particular device to the coverage range of a typical device (e.g., for transmission rate estimation, coverage estimation, roaming decisions, etc.). The information can also be used to translate the measurement results obtained on that particular translate the measurement results obtained on that particular device to estimated mesh-to-mesh coverage in the wireless mesh network. The information can be used to see if the particular device supports reaming instructions, and if so, what type.

Water type.

FIG. 2 is an example user interface illustrating a welcome page outlining the general functionalities of a mobile software application that transform the user's nobile device to implement one or more rechangues introduced here. As illustrated in FIG. 2, the interface generally outlines the points, by breaking it down into three segments (not in a necessary order); (1) itsuallation of the main mesh point (e.g., mesh point (12), (2) Installation of the additional mesh points (e.g., mesh point 1120-1120); and (3) Testing of 23 the installed mesh points (e.g., mesh point (e.g., mesh point (12), 1120-1120); and (3) Testing of 23 the installed mesh points (e.g., mesh point (e.g.,

robustness and potentially higher transmission rate. In gen-eral, the connection between the main mast point 112a and the gateway 116 should be reasonably close and without substantial interference, such that the main mesh point 112a does not become a bottleneck for the bandwidth to the network 120.

with the user to walk around to perform coverage a forest the user the translation of the main mesh point 112 verify that the available transmission rate and coverage a forest no become a bottlemock for the bandwidth to the meter his or her need. If the user later wants to upgated the latered connection and add additional mesh points to provide more bandwidth to the existing network structure, the supplication can assist the user later wants between the structure, the supplication can assist the user to achieve that as well. As such, example finentiates of such opportation of the main mesh point 112, the application can cause application can assist the user to achieve that as well. As such, example finentiates of such opportation device (e.g., as or suggest depth and the mobile application jintroduced here include.

(1) surveying the wireless onverage in the environment; only the default SEID) or after receiving the wireless onverage in the environment; only the default SEID) or after receiving the wireless any example, finentiate application is introduced here include.

(2) communicating the type and expeditities of the user's device mesh point 112 a functioning as it treatment by the mobile application; which is playing with a process of each many better than the network, or a cloud-based servel; in FIG. 3B. There can be not the network or a cloud-based servel; in FIG. 3B. There can be a many to the exact to the example of the example depending on the device type and the operating system of the user device 130a. In one embodiment, if the user device 130a is an Android<sup>TM</sup> device, the application may connect to the default SSID and password by accessing the configura-tion of the WLAN circuitry on the device. Alternatively, if the user device 130a is an iOSTM device for example, the mechanism of connecting to the main mesh point 112a cation may utilize other types of wireless connection application can instruct the user how to connect to SSID. In yet another alternative, when available, the 9 65

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• 9 to the main mesh point 1120 first for purposes of establishing WLAN connection between the user debeies 1300 and the main mesh point 1120. In variations, classic Bluecoth with any also be used to carry profile information when avail-Bluetooht\*\*) first for establishing the initial communication and then hand off to WLN, to make the installation procedure assier. For example, mechanisms such as Generic Attribute Profile (GATI) of Bluetooth Low Energy\*\*\* may be used to exchange the SSID, password, and/or any other relevant profile and user data over a BLE connection

As illustrated in FIG. 31b and password for the mesh point 112a and the superioring uses a released in the application are also provide and prompt to use to resolve the conflict by entering and prompt to use to resolve the conflict by entering and prompt to use to resolve the conflict by entering and prompt to user to resolve the conflict by entering and prompt to user to resolve the conflict by entering and prompt to user to resolve the conflict by entering and prompt to user to resolve the conflict by entering and prompt to user to resolve the conflict by entering and prompt the user to resolve the conflict by entering and prompt the user to resolve the conflict by entering and prompt the user to resolve the conflict by entering and prompt the user to resolve the conflict by entering and prompt the user to resolve the conflict by entering and prompt the user to resolve the conflict by entering and prompt the user to resolve the conflict by entering and prompt the user to resolve the conflict by entering and prompt the user to resolve the conflict by entering and prompt the user to resolve the conflict by entering and prompt the user to resolve the conflict by entering the conflict by entering the product of the papilication introduced here for reselving user a location in the application introduced here for reselving user and the user to differ by entering the estimation to prompt the user to proceed from the user device 130a and suspendent and the user to proceed from the main mesh point 112a and the user to proceed from the main mesh point 112a and the user to proceed the process of the user interfaces illustrated in FIGS. 3B and 3C.

Alter the main mesh point 112a and the user to proceed the final process the turner speed from the main mesh point 112a and the user to proceed the final process the further with the installation. FIGS. 3B and 3F illustrate speed from the main mesh point 112a and then reported to the 4st of FIG connected.

Alter the main mesh point 112a and then reported to the adversary the t

supported Internet speed can be used to determine a larger speed rate for the mean teach are meant from the manning speed rate for the mean responded to the application with the rate of the mean reported to the application using WLM. She and the speed may be measured from the main mesh point 112a and then reported to the application using WLM. She and the size of the properties of the speed may be measured by the user where the main mesh point 112a, even though the same from the measurement may be been seed user the proporties the business device 112a through the main mesh point 112a, even though the sport of the locations of the dead spots, the measured from the measurement may be loss accurated than being measurement may be loss accurated than being an are sport one by one.

FIGS. 6A-6E are example user interfaces the sile strained in the sport of the locations of the dead spots, the application and the application in the point 112b, and the spots of the locations of the dead spots, the application are spots in the vireless mesh mesh point 112a. Whether the spots one by one.

FIGS. 6A-6E are example user interfaces the private that the spots of the locations of the dead spots, the spots of the locations of the dead spots, the spots of the locations of the dead spots, the spots of the locations of the dead spots, the spots one by one.

FIGS. 6A-6E are example user in install one or note of the following example ways: Booding-based so ing additional mesh point 112b, and then, as shown in FIG. 6B, the application instructs the available brank-with beset on the dispersion observed at it as illustrated in the private point 112b, and then are shown in FIG. 6B, the application instructs the user in the path of the properties of the path of the properties of the properties of the path of the properties of the properties of the path of the properties of the p available bandwidth, then the probes should be received at a lower rate (e.g., buffering the packets at the bottleneck link). The available bandwidth equals the maximum rate at s generally necessary to generate the traffic, and therefore oractical factors such server's general availability and band-Pathload or ABwProbe), if the probe rate is higher than the that for Internet speed measurement, a server in the Internet

width should be considered in the implementation. FIGS. 4A-4C are example user interfaces illustrating introductory processes for assisting a user in installing

additional mesh points in the wireless mesh network. FIGS.

4.4.4.C may be implemented to provide the user with an overview of the automated installation guidance procedure, including thead spot finding, mesh point installation location 5 guilding instructions, and WLAN coverage and connection 5 peed verification after the installation. FIGS. SA-5D are example user interfaces illustrating processes for assisting a user in finding week reception spots (or "dead spots) for potential locations to install additional 10 mesh points.

face and the possible graphical instructions. Example inter-faces in FIGS. 6C-6E introduce to the user the two remaining items to go through: installation of the additional mesh points 112b-112n, and verification of the installation by away from the main mesh point 112a while holding the user device 130a during the installation of the additional mesh points, can also be helpful. This may be initiated by the user remaining procedures, and acquaint the user with the interrunning tests. A video demonstration of the procedure, such points, can also be helpful. This may be initiated with the example interface shown in FIG. 6C. 9 \$9

tional mesh points in the wireless mesh network. After the provides the highest transmission speed; (2) the number of mesh point 112b and at a location nearby the main mesh point 112b. Thus, the user is instructed by the application to wilk from the min mesh point 112b to a first deed spot. A men wilk from the min mesh point 112b to a first deed spot. A mesh of min mesh point 112b to a first deed spot. A mesh of min mesh point in the walk), the application employs one or more of the link in the user. In some implementations, if the quality of the the estimation for motion (1) communication to communication in the best point of methods. the wireless coverage, and automatically generate (cedusacks to the cedusacks) to the user is instructed to continue, such as statent the taser to move the backs or advices are. "Too close" (e.g., FIG. 74), "Close" "One-wise, the application can instruct the user to move the (e.g., FIG. 77), and "Too daw" (e.g., FIG. 77), and "Too da

instant ore acongonican mass point 11.26 and execution the mears of the mainted guidance generated by the application.

FIGS. 8A-65 are example user interfaces illustration and against processes of installed mesh point of the mainted guidance are communicated processes of installed mesh point of the application can communicate (e.g., but any or branging the application can communicate (e.g., but any or branging the endigrational mesh point 1126 (e.g., by changing the endigration of the Wides and example for simplicity in describing the endigration process, rather the nair mesh point 1126 and counced to the main mesh point 1126 and counced to the main mesh point 1126 and example for simplicity in describing the endigration process, rather the installation and infall configuration process, rather the installation and infall configuration process, rather the installation and infall configuration process, rather the top of the wireless mesh network. For example, the additional mesh point 1126, and connect to be made to the installation and infall configuration process, rather the installation and infall configuration and in the wireless mesh network. For example, the additional mesh point 1126 and connect to another mash point 1126, and connect to be made to the main mesh point 1126.

Also the process of installation and infall configuration of the wireless mesh network. For example, the additional mesh point 1126, and connect to another mash point 1126, and connect to the mash point 1126, and connect to the main mesh point 1126, and the wireless mesh network. For example, the additional mesh point 1126 and the wireless mesh network. For example, the additional mesh point 1126 and the wireless mesh network. For example, the connection of the wireless mesh network. For example, the connection of the wireless mesh network. For example, the additional mesh point 1126, and the wireless mesh network. For example, the additional mesh point 1126, and the wireless mesh network. For example, the connection of the wireless m

of suitable hardware to implement a variety of network rechnologies, for example, a 24 GHz WLAN, a 2 GHz the application and the mesh network ean work ingeluc to rechnologies, for example, a 24 GHz WLAN, a 24G Bluetoothi'v, a sub-1G radio link, a power of provide corresponding feedback to the user about a sup-line Fithernet link, and so forth. The warrey of network gested insention of for additional mesh point installation. In ther below). According to one or more embodiments, the quality of link of the mesh point with other parts of the mesh network can be estimated using one or more of the following powerline can be estimated. In a number of implementations, the mesh points are equipped with more than one types technologies can be used as a pool for selecting the best link forwarding data traffic and also, in some embodiments, implementing a dedicated backhaul link (discussed fur-

musch point 112b can connect to another musch point 112c, were a certain threshold, such as the laterate speed available at the which may be already set up to function as a working part of the wireless mesh prior its according to the wireless mesh profice as the stream mesh point 112b connect with the main mesh point 112b connect with the main mesh point 112c and the stream of the propers of automatic configuring the additional mesh point 112b and the rest of the mesh point 112b and the rest of the mesh point 112b and the rest of the method.

Such process can be instructed by a why working mesh point 112b and the rest of the method. Such process can be instructed by a why where where the installed mesh point 112b and the rest of the method. Such process can be instructed by a why where where the installed mesh point 112b and the rest of the method in the part of the stream of the profit in the stream of the process can be instructed by a why where button, as shown in 15C. 8B. For example, a link are estimation can be instructed to a 2.4 GIZ link, a sub-1G link, a sub-1G link, a sub-1G link, a sub-1G link are sub-10 to the link of the sub-10 to

Once a dead spot is covered, the user is instructed to check the other known dead spots in the environment. As the user one or more implementations, the application can utilize those mesh points that are already installed, and take into 65 mesh points when determining the location for the next mesh point. For example, the application can consider or can cause the user's mobile device to mam to another mesh point

during the installation process.

The application may also provide relevant information (e.g., assured readons) in the controlling softwy of the mesh network as as to help the mesh network perform nearing more effectively. More details regarding roaming techniques

are discussed below.

When the user completes the elimination or mitigation of the most necessary of the user concerning teaching the transfers of a survey is shown an EG. 9. If a faster speed is desired by the worst mental additional mental points in order to a survey is shown in EG. 9. If a faster speed is desired by the worst of the mobile device. As example interface of a survey is shown in EG. 9. If a faster speed is desired by the worst of the mobile device. As example interface of a survey is shown in EG. 9. If a faster speed is desired by the worst of the mobile device. As example interface of a survey is shown in EG. 9. If a faster speed is desired by the worst of the mobile device. As a such its user is mirror the upplication to install additional mental points to improve the speed crovered in the mest of the worst 
ito) and/or mask network functions (e.g., whether to some the device how to noam; of what frequency band to connect) has do in the pre-great treational merites from work-based on the type of device that the user has Specifically, ing well in the disclosed wireless mesh aretwork environments. The example, because some portion of the estimation user, how exactly the user holds the device is paid (which affects the antennas or increation).

The location the device is held (which affects the antennas or increation) or the location the device is held (which affects the antennas or increasion) or the location the device is held (which affects the antennas or the model of the work of the work of the proposed (e.g., 1x1, 2x2), as well as the WLAN technolong antennas or to an affect the measurement results (FIG. 12 shows an example above-discussed measurements. Accordingly, some embodi.

The proposed (e.g., 1x1, 2x2), as well as the WLAN technolong antennas antennas application or more or more ordination sensors located on the user's mobilic device (e.g., 1x1, 2x2), as well as the view of the compared to where the ordination sensors located on the user's mobilic device (e.g., 1x1, 2x2), as well as the view of the compared to where the ordination sensors located on the user's mobilic device (e.g., 1x1, 2x2), as well as the content of the user device (a.g., 1x1, 2x2), as well as the content of the user device (e.g., 1x1, 2x2), as well as the view of the compared to where the ordination is the size of the compared to the user and the same of the content of the user and the same of the content of the user device (e.g., 1x1, 2x2), as well as the ordination incluments of the user device (e.g., 1x1, 2x2), as well as the ordination incluments of the user device (e.g., 1x1, 2x2), as well as the ordination incluments of the user device (e.g., 1x1, 2x2), as well as the ordination incluments of the user device, and the replacement to adjust how the application maps the originating host to a destination computer that are expected. examples, the application can guide the user on how to hold the mobile device (e.g., to hold at a preferred angle, or to stay away from certain reception sensitive portion of the particular device) in order to get consistent survey results. measured wireless performance to the wireless coverage at the location where the mobile device is held. In some lirection the user is walking toward, which in turn can assist determining the guidance instruction used

or ginating host to a destination computer that are reduced back to the seware. Ping papically operates by sending lineared Courtol Mussage Protucol ((CMP) Echo Request packets to the target host and waiting for an ICMP Echo Reply. The program may report curors, packet loss, and a stratistical summary of the results, typically including the minimum, maximum, the mean round-tip times, and/or surpduri deviation of the neum. However, because ping standard deviation of the mean. However, because ping packets are typically very short, and the estimated rate based on such peckets would not represent the actual throughput and internet speed capability, and therefore they are not a good measure for setting the target transmission rate. Other 9 65

example considerations include, but not limited to, freLAN (WLAN) channels in a typical 24 GHz frequency
quency of the transmission of test packets, type of test
packets, and so forth. For example, the test packets should
not be of a type of packets (e.g., control packets) that are to
(e.g., in the United States) in a typical 5 GHz frequency
be transmitted at a lower rate by the design of rate control- 5 band.

associated. In many examples, the data traffic is mainly are convolling mechanism in WH-ip protocols to converge downlink data ineffice from the mesh point to the user's 'glogy 2004). The RSSI values can be liftered to wearhold mobile device, bowever, uplink data traffic can be used to solve the same or a similar manner. Then, the data rate as well multi-path fading) does not negatively affect the accuracy of as the received signals reneally infedience (RSSI) (ameasure - it he estimation. It some mobile ment of the power present in a received ratio signal) estimated with multiple antennas, MIMO RSSI values are between the user's device and the mesh point can be used to dispet the adoption of different locations. Depending on the implementation, the as an alternative, if thermal compensation coefficients are link estimation calculations can be done in the software 20 available, then the RSSI value can be offset to accommediate Accordingly, the software application as well as the mesh point insidested therein can initiate a specific test data raffic to be sent between the user's mobile device and the mesh point with which the user's mobile device and the mesh point with which the user's mobile device a second. In many examples, the data traffic is mainly downlink data traffic from the mesh point to the user's mobile device, however, uplink deat artific use to estimated min in the same or a similar manner. Then, the data rate as well mass the received signal strength indicator (RSS) in measure. Is the ment of the power present in a received raffor instance.

in the Sulfazion running on the user's mobile device, or alternal changes learned supplication that application and provide user into solvaver or firmate repeating on the meet's mobile device, or the motivation application and provide user interest seemed to point. The software application are application as a provide user interest seemed to be greated to the situation of the state 
In the WANT IF PREMONE LAUD.

More specifically, to perform the link rate estimation (e.g., for finding a suitable location to install an additional mesh point, in order to mitigate a class frowl), first the software point, in order to mitigate a class frowl, first the software point, in order or more remodiments as and mean and are mastered in the the remembrant with the best link to the user's mobile device based on the disclosed rechnique) to start transmitting specific downlink rest data packers to the user's mobile device based on the disclosed rechniques) to start transmitting specific downlink rest data packers to the user's mobile device based on the disclosed rechniques) to start transmitting specific downlink rest data packers to the user's mobile of the process that is used to cellouise the average PHY rate. Other thing specific downlink rest data packers to the user's mobile to prove the standards. In some embodiments, at least 10 data units are least 10 the average PHY rate. Other standards has one camper expension of the standards are aggregated in the UREP 802.11 family of support of the process that is used to collage user the process of the standards are the standa imes a second, 30 times a second, and so hort, in order to rest the capability. Each rate should at least be sustained long poses of discussion brein, the TPUT can be defined as the enough for the rate control of IEEE 802.11 sproof to 16 Transmission control Protocol (TCP) layer TPUT that the converge or stabilize. Fig. 12 is a babe illustrating the circul (e.g., the user's device) can pass through the mesh network) to the installed mesh point (and through the mesh network) to the is at least IM bytes. In some examples, tests can be de performed on multiple available frequency bands (2.4 GHZ, 80 5 GHz, ar others) androt different channels. The testing, (I packets can be sort at an increasing rate, for example, 20

The mesh point can verify that the transmission of the aggregated packets are acknowledged ("ACKED"). Depending on the Taffe's direction, either the mesh point of the use's device can determine the RSSI values for the last 10 select number of packets are determined (e.g., allowing for

point installed at the location where the user's device is

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home gateway. In a number of implementations, the TPUT of the mesh network can be expressed as follows:

$$\frac{1}{rr_{IT}} = \frac{1}{rCr_{O-mbood}} \left( \frac{1}{LT} + \frac{1}{LSSR} \frac{1}{DEVICE} \frac{1}{Hirt} HH' \overline{Race} \right)$$

where LTPUT, is the TPUT on the link, which is the TPUT between two mesh points. The TPUT between two mesh points are cellularded using tere packets after the installation of the two mesh points. The TPUT measured can be frequency band specific, and in which case, the TPUT number used here should correspond to the frequency band that the

on major device venders and major device types to create enough statistical data to create a meaningful database for sufficient statistical data that can enable a meaningful mapnapping purposes. For example, handsets, tablets and per-

can be tested to gather their wireless performance (e.g., TPUT) under different attenuation configurations. FIG. 11As is a table illustrating the upper, center, and lower

By (1) 5 frequencies of different Wireless ("AN channels in a typical 2.4 GHz frequency band, PIG. 13B is a table illustrating sample frequencies of different Wireless LAN (WLAN) channels available ("e.g., in the United States) in a typical GHz frequency band. As illustrated in FIG. 13A, in the United States and Canada, there are 11 channels available for use in the 2.4 GHz Wireless LAN frequency band as defined by IBEE 802.11 family of standards. 9

un contents to the implement mapping of measured 3 stobere.

Note that, in order to implement mapping of measured 3 stobere.

PUTI performance (through the user's device) to the performance (through the user's device) to the performance (through the user's device) to the performance of the additional mean point, different devices are tested in a controlled environment, and compendent of the additional mean point, different devices can be collected at sexuous method for 10 software application and/or a deemon (i.e., a special performance in the same controlled environment and compendent of the additional mean performance of the additional mean percentage and analyzed (e.g., 2.4G and 50). The measurement on the data remaining and receiving ends, and an example of the device on the data remaining and receiving ends, and an example of the device on the data remaining and receiving ends, and an example of the device on the data remaining and receiving ends, and on all the available frequency bands (e.g., 2.4G and 50). The measurement on the data remaining and receiving ends, and on a decrean numbers for the device on the data remaining and the device on the data remaining and the data collected, for a mesh point on the data remaining and an example of the device on the data repression of the areas of the same procedure is performed at search examples for the device under the specific attenution of the available frequency bands (e.g., 2.4G and 50). The manufacture information of the available frequency bands. Data can be statistically the available frequency bands. Data can be statistically the device of the data collected, for a mesh point on the data collected, for a mesh point on the data collected, for a mesh point of device destination of the available frequency bands. Parasite of the device of the same collection of the device of the same FIG. 14A-14C are different statistical data gathered for 15 mapping the performance of a particular type of devoice to mapping the performance of an additional mest point initialide at the same location. In particular, the example device is an Apple iPhone 6, which is an IEEE 802.11ac user's device is currently measuring or adopting. Based on evolutionary coperiments, 170—170—170—170 or device with a 1x1 antenna setp. In this particular wample, more embodinems, the LTPUT-0.7x4stimuled[PHYRate, p. pecasses it is observed that the device operating in 5 GHz where speed, is the Internet speed measured at the main may disconnent more easily than what would have been for where speed, is the Internet speed measured at the main and point late diversity connects to the gateway, which in a mesh point, 2.4 GHz frequency is used to check for num connects to the Internet.

Note that, in order to implement mapping of measured 2 shove.

mesh point. Continuing with the above iPhone 6 example, based on the experiment results, the following pseudo code 55 can be used for estimating TPUT for a mesh point's performance at 5 GFA using RSSI and PHY rates measured at the user's device at 2.4 GHz. measurements between the nser's device and the existing

| I RSS| < -50 and | I Z.#G Rate = 70Mbps, then report TPUT for Phone-6-5G = 173Mbps, | II-69 = RSS| < -50 { | II-69 = RSS| + 88 | II-69 = RSS| + 15 that can be use pseudo codes. 23 Start>
11.24G hate > 72Mys or 11.24G Rate < 150Mys {
11.24G nmx of RSS1 of antenna > -60 {
11.24G nmx of RSS1 of antenna > -60 {
11.24G Rate < 70Mps, then report TPUT for Link-OrbicSG = 175.5Naps; If 2.4G Rate > 70Maps, then report TPUT for Link-Orbi-5G = If RSSN 4 - 400 and If 2AG Rate a 70Mpys; then
report TPUT for Link-Obi-3G a 175.5Mpys;
If -77 = RSSN 4 - 406
Entirely Rate - 22.79 × (RSSN 1-74)
Entirely Entirely Rate of 22.79 × (RSSN 1-74)
Entirely Entirely Rate of 22.79 × (RSSN 1-74)
Entirely Rate - 22.79 × (RSSN 1-74)
Entirely [JAGNips e 1.4G Rate e 73Mips (
Estimated Rate = 3.54 \* (2.4G Rate = 26) + 27;
round up Estimated Rate to the closest 5G FHY rate;
report TUVT for Link-Ori-5G = Mart (Estimated Rate, RSS)
Estimated Rate, Scheme (MCS) rate; report TPUT for Link-Orbi-5G = closest MCS rate; 1-85 < RSSI < -17, then
report TVOT for Link-Othi-5G = 26Mbps;
1RSSI = -85, then
report TVOT for Link-Othi-5G = 1Mfps;

is used. The following is another example pseudo code for estimating TPUT for a mesh point's performance at 2.4 GHz.
2.4 GHz.
2.4 GHz. type of devices may have different character profile, and therefore the parameters and/or logic flow in the pseudo code should be adjusted according to the type of device that Note that the above pseudo code is merely an example measured for Apple iPhone 6. As mentioned above, different

4 round Estimated Rate to the closest MCS rate; report TPUT for Link-Orbi-3G = closest MCS rate; If -90 < SSSI < -44, then report TPUT for Link-Orbi-3G = 19Mftye; If SSSI < -85, then Estimated Rate = 1.72\* (2.4G Rate = 19) + 39; noted up Estimated Rate to the closest 2.4G PHY nur; report TPUT for Link-Orbi-2.0 = Max(Estimated Rate, Estimated Rate); report TPUT for Link-Orbi-2G = 1Mbps; ) If 26Mbps s 2.4G Rate < 72Mbps { Estimated Rate = 1.72\* (2.4G Rate to the r

The following is yet another example pseudo code for estimating the performance of the user's device at 5 GHz using RSSI and PHY rates measured at the user's device at 2.4 GHz.

8 SEACH STATE OF Authents = -50 {
If 2.4G raw of RSSI of auteum = -50 {
If 2.4G Rate < 7DAlpps, then report TPUT for Phome-6.5G = If 2.4G Rate |
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Fatimated Rate a 13.84 \* (RSSI + 69) + 88; round Fatimated Rate in the closest 1x1 Hac PHF rate; report TPUT for iPhone-6-5G = the closest 1x1 Hac PHF rate;

IFRSS s = 69, then
report TPUT for iPhone-6-5G = iPhone-6-2G (i.e., use the 2.4G
averaged rate and map it to the closest 2.4G MCS rate);

FIGS. 15A-15D are example tables of closest PHY rates it can be used for throughput estimation in the above

the additional mesh point. Shown in FIG. 16 is an example for guicing a user with Apple iPhone 6 for installing a mesh point that is to operate in the 5 GFz frequency band. The example thole may be used to generate instructions in the user interfaces shown in FIGS. 7A-7E. FIG. 16 is an example table for mapping between estimated link rate (throughput) and user instruction, for a mesh point operating in a particular frequency band. Specifically, with the results from the above TPUT estimation techniques, the software application running on the user's device together with existing mesh points can provide automated guidance to the user with regard to the location of installing 25

erage, and FIG. 17B is an alternative example that implements a hysteresis mechanism for mapping between estimated link rate and wireless network coverage. The tristate 33 mechanism illustrated in FIG. 178 is merely an example, as more or fewer states may be used. Specifically, with the results from the above TPUT estimation techniques, the software application running on the user's device together with existing mesh points can also provide wireless network coverage survey to discover tead spots or to weiffy the mitigation thereof. The examples in FIGS. 174.1B may be used to generate instructions in the user interfaces shown in FIG. 17A is an example table for mapping between estimated link rate (throughput) and wireless network cov-98

Roaming in a Wireless Mesh Network FIGS. 5A-5D.

136a-136b) only start roaming when the measured RSSI value drops below a preferentimed introduct. This mechanism can be ineffective in some secaratics, for example, when the link to the Internet is not functional, and yet the S0 client does not nown to another nearthy access point that has a functional link, in addition, the RSSI value of access point measured by the client is not access expected that the second continuous control of the client is not access that the second continuous that the client is not access that the control of the quality is the client is not access that the control of the quality of the client is not access that the control of the quality of the client is not access that the client is not access to the client is not access that the client is not acces Traditionally, wireless network clients (e.g., user devices 45 20

of the writeless link as the link is typically asymmetric (e.g., because the transmission power of an access point is usually a higher han the client's transmission power). Accordingly, the disclosed wireless mesh network can measure not or more parameters in addition to the RSSI value to better determine when and how to roam a client. Some examples of the parameters is include: the data rate With simultaneous reference to flow chart 2100 illustrated in FIG. 23, an example method for performing roaming decibeing currently used, packet aggregate size, packet error rate (PER), retry count, available airtime, and delay on the link. sion in a mesh network are further discussed below. The method can be implemented and performed by a controlling entity of the mesh network in conjunction with the software application that runs on the user device (e.g., device 130a)

point 112a, FIG. 1A), distributed among the mesh points (e.g., on mesh points 112a-112n, FIG. 1A), and/or remotely controllable (e.g., vis a remote server that is in the WAN IP and the mosh points. Depending on the embodiments, the controlling entity may be centralized (e.g., on the main mesh

Nationary Nature (Association of the Association of 9 Specifically, in one or more implementations, when a particular citent is associated with a certain mesh point, other mesh points can also measure the RSSI value, TX data rate, and PER from the particular citent (Step 2102). suring these values can be performed in a simultaneous or a staggered fashion. For example, in some embodiments, the RSSI value, TX data rate, and PER can be measured together Depending on the embodiment, the decision flow for mea-

Reading of the particular fisher to another mesh point can take place, for example, when the existing in five, quality is to traff deemed insufficient and it is estimated that there exists a better link for the client to connect (Step 2104). To avoid rouning to frequently and potentially wasting overestive resource on taking measurements, at timer medianism can be in implemented (Step 2104), such that only when a link quality as III problem persists then is the next step in the remaing mechanism tiggered. The better link may be a different mesh point, of it may be a different mesh point, of it may be a different mesh point. Of it may be a different mesh point, of it may be a different mesh point of it may be a different mesh point. We have a different mesh point of it may be a different mesh point of it may be a different mesh point of the may accurate measurement (e.g., breause of 40 with may not be in a accurate measurement (e.g., breause of 40 with proceed to the next step.

A number of embodiments can determine when roaming packet to determine what offset value may have been used. In some examples, similar to what is described above multi-path fading), one or more embodiments are to average RSSI values over packets. Some embodiments can also detect the Modulation and Coding Scheme (MCS) of the is to take place based on information gathered from both the mesh point that the client is currently associated with and the mesh point(s) that the client is not currently associated with.

regarding link rate estimation, different mapping can be formulated from clical statisties (e.g., RSSI value, PHY rate, e.g., on the frequency band of use in order to estimate what the anticipated RSSI would be on another frequency band to which client may connect, and/or on another mesh point to ments, a riapping can be stored (e.g., at each mesh point) in the mesh network. The mapping can be used for mapping the data measured from the client to an estimated PHY link which the client may be able to connect. In certain embodi-

based on PHY garantees, such as data rate, RSSI value, so etc., and the list can be used in determine the best candidate for, can the list cample, similar to the rate estima-tion techniques described above, test packets can be sent (Stop 2110), and a potential link rate may be determined (e.g., by uplink RSSI zador other parameters observed on so other mesh points in proximity) (Stop 2112). Depending on the embodiment, the list can be maintained by the control-If the link quality problem persists, the meah network stars to complie a fist of poemial rounting candidates by starting to monitor the quality of potential links from other mesh points (Stop 2108). The list of candidate is an elucitated

ling entity, which may be scattered among the mesh points (e.g., in a deventralized fishion) or can be centralized (e.g., in a deventralized fishion) or can be centralized that may in the main mesh point). Example of the parameters that may be taken into account for deciding the best roaming carelidate include. a list of clients of each candidate already associated with and how much aggregate traffic is between

sackloader was an area cases aggregate. The supported by the candidate and its elients; the type of Iralis supported by the candidate and its elients; the type of Iralis supported by the candidate, can, case and the type of Iralis chair the client who may ream uses.

If there is a suitable candidate (Sup 2114), for example, when the potential link to the candidate is better than the current link by a certain degree (e.g., AB), then the roaming takes place (Stop 2118). Otherwise, another time to mention are not be implemented (Stop 2116) before the street and keep record of this period of down time, and take into account the strength of the country of worth of the country nouning decision flow chart can be run again, such that the system ean avoid perform reasoning at an unecessarily high strenges. When meaning takes place, depending on the type of roaming meticod used, there may be a period of down time during which the WLAN connection is unavailable. Therefore, certain embodiments disclosed herein can mea-2 50 25

ve 45 would by 10 reconnect back to the network. In some enthodinents, fill de disconnected client attempts to counce; bard to the mesh point or the frequency band that the concluding entity determines to be less desirable, the concluding entity can cause the mesh network not respond to the 10 sassociation request. Additionally or alternatively, the control ingentity parts when a farmer for the client, such that in the case that the disconnected client keeps requesting to the concret to an inferior mesh node or frequency band, the mesh network may eventually allow the client to connect in the mesh retweet way eventually allow the client to connect in a farmer weights, so as not to leave the client with no can force the electron oran by disconnecting the client (e.g., with Desurbentication and/or Dissusciation management fractos). The mesh network may determine the client type and may provide a disconnect reason to the client. However, does not support intelligent roaming commands (e.g., those described in IEEE 802.11v and 802.11r), the mesh network generally speaking, disconnecting a client is undesirable because after disconnection, it is uncertain whether the client 35

that the support of these intelligent roaming commands may be client implementation dependent and not universal, sometimes even when the client advertises the expability to support such commands. Therefore, the controlling mechacommands to communication with the client to suggest the roaming. However, it is recognized in the present disclosure the mesh network can use roaming commands to enable pre-roaming client measurement, and can use such kind of If the client supports intelligent roaming commands, then nism disclosed herein can not only discover which clients have the capability for intelligent roaming commands (e.g., 65 9

during the association process), but also learn over time which ones of these client devices are behaving as anticipated and which ones are not, so that the mesh network in performing roaming can adapt to a particular client's behavior.

In general, BTM allows an accompanies where is ongoing traffic. One or more embourness...

when there is ongoing traffic. One or more embourness...

the mesh arevork can use the following packets for traffic.

BSS Transition Management Request (AP to client)

BSS Transition Management Response (Client to AP), Specifically the BSS Transition Management Response can be used to expect and the client one considers associate (e.g., "Neighbor Report" information). The BSS Transition Management Report information). The BSS Transition Management Report information.

As shown in the above pseudo code, once a decision to Response can be used for the client to accept or reject, and the client on accept or reject, and the client can also include a reason code for the acceptance.

\*\*A shown in the above pseudo code, once a decision to Response can be used for the client to accept or reject, and the client can also include a reason code for the acceptance.

\*\*A shown in the above pseudo code, once a decision to Response can be used for the client to acceptance.

\*\*A shown in the above pseudo code, once a decision to Response can be used for the client to acceptance.

\*\*A shown in the acceptance and the acceptance are a client than acceptance.

\*\*A shown in the acceptance are a client to acceptance and the client to acceptance are a client to acceptance.

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\*\*A shown in the acceptance.

\*\*A shown in the acceptance and a client than acceptance.

\*\*A shown in the acceptance are a client to accept a client to accept a client to accept a client to accept a client and a client to acceptance.

\*\*A shown in the acceptance are a client to acceptance and a client than a client to accept a client and a client to accept a client and a clien client when there is a subtantial performance drop (e.g., bollow a more significant threshold than a regular, coming friendly diently and similarly, in some embodiments, the mesh network can choose not to noam the particular client some with another mesh point or another hand on same ewith another mesh point or another hand on same mesh point. Similar to described above, rearning decision any depend on the "rafter open the dominant radiic type or identifier (AID), or any other unique identifier. The decision nebures are against the new man substitution when that regarding when to mean a performed may depend on the client's observed behavior. For example, if the client in the past has a Listory of not following the anticipated roaming behavior responsive on a reaming command, then is much where R02.1x and EAP methods for authentication are the mesh network and decide to only namn the particular supplies. client has ranned earlier. In addition to mitigating the adversarious disconnection issue, the breaffl of intelligent between the statement of the client in a part to the client of the following includes, for example, faster channel scanning.

Figure and probe responses are needed, there is more for earliering hyperse. The statement of the rest of the network; and reduced client is more for earliering hyperse. The statement of the rest of the network and reduced client is more for implementations, the mesh in experience of the rest of the network of the n Depending on the implementation, this historical data can be maintained based on the client's MAC address, association 10 More specifically, one or more embodiments of the mesh ment (BTM) for network assisted roaming, described in IEEE 802.11v standards for wireless network management. can learn over time how different clients behave and can adjust its roaming instruction and behavior accordingly.

Measurement report (i.e., for a client or an AP to query the 65 cstarts other side for the quality of the link), as well as a Neighbor IT REST Report (i.e., information about neighboring APs that are known enditletes in which the client can consider reaming). Other IEEE 802.11s measurements supported include, for example Decor, Channel Load, Noise Eisleugran, STA 8. Statistics, Location Configuration Information, Transmit Stream/Category Measurement, and Frame.

as described in IEEE 802.11; standards. Without 1956 802.011, a mobile device client may need to go through reauthentonition after reassociating. With IEEE 802.11; the meth network can restablish esting security and/or QoS parameters prior to reassociating and a client to a new meth point. This technique is especially useful for peat time between a mobile client and WLAN infrastructure when that mobile client is connecting to a new mesh point. Reauthentication time are also saved, which is especially prominent The mesh network can also perform fast BSS transition, described in IEEE 802.11r standards. Without IEEE This can also reduce the time that connectivity is interrupted interactive services (e.g., voice and video communications) 'n

oner rouning decision happens, send 20 ARP packets; from once rouning decision happens, send 20 ARP packets; in the past three seconds, then average over all new packets in past three seconds;

If \$851 > -65, than
report Path Rear Targe = 351Mtps;

If -65 R876 - cade [1, 629 \* (8851 + 80) + 117
report Rate = 10.39 \* (8851 + 80) + 117
report Path Rate Target = map Estimated Rate to the closer 80MHz
rate.

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If this boding plane (e.g. on the outh vour every for seconds)
If Finder of a counting window is open and the client does not If Finder of the outh of probe request, this line can be increased from the or IF 90 and and the kept if 80 and the client monds a possible of the request or any other request of with this counting in regiser.

If there are not O's problet in the past three accounts, then example over all keep to these accounts, then average RSSI values on last 20 prokets from monitor mode; 26 otherwise,

> If -80 < R.S.II < -85, then report Path Rate Target = 58Mbps; If R.S.I < -30, then If RSSI < -30, then report Path Rate Target = 1Mbps; <End>

The pseudo code for decision on opening up the roaming window is provided farein as follows. Şud 10 the mesh network decides whether to roam the client to a target candidate, and if so, which one. An example pseudo code for such is provided as follows. Now, with the path rate of the target candidates estimated.

open up roaming window to the best path rate if the best path rate is higher bian max(10+current path rate, 20); 1f RSSL Congains >= 70 {
17 km for original larger than 20, then
17 can for original larger than 20, then
17 can up rounding wisdow figula met larger than
18 can be seen a seen or seen than 17;
17 km for original seamber than 75;
17 km for original seamber than 70; then 5 Sharby

If RSM, Congine 1 > -70 {

If RSM, Congine 1 > -70 {

If RSM, Congine 1 wayer than 10, then

roan if First and tender is larger than pell\_mes\_original +30

and RSM; is larger than -75, see If Pack Rear original -75, and If Pack Rear original remainer than 10, then

20-pent, conformal man is larger than -80, and and an another than 10, then

20-pent, conformal man RSM is larger than -80,

do not roam; else, roam if Path rate target is larger than 10+path rate al > 5Mbps, then do not roam;
If Path rate\_original < 5Mbps {
 If RSSI\_Target<-85, then arget < -80 { If RSSI\_lan If Path

do not open up roaming window;

To all to the upper will impact pain time, it destination poun rate in higher than 30kbps;

[16.75 × RSVI Tanget > -40t, then

[16.75 × RSVI Tanget > -40t, then

[16.75 × RSVI Tanget > -40t, then

[16.75 × RSVI Tanget < -40t, then

[17.85 × RSVI Tanget < -40t, then

[18.85 × RSVI Tanget < -40t, then

[18.85 × RSVI Tanget < -40t, then

[18.85 × RSVI Tanget < -40t, then | PRSSI\_Original < =80 { IFRSSI Target > -75, then roan to the target with highest path rate, if destination path rate

| 1785|| Ordival < -80 { | 1785|| Tagal > -80, ben | 1785|| Tagal > -80, ben | Open up rouning window if destination path rate is ligher than

If RSSI Target < -80, then do not open up rounting window;

45 }

open up rouning window;

802.11se with a 1x1 antenna configuration, operating in 5 GHz frequency band, the following example are pseudo 50 codes for a soff force roaming decision for the same device. Note that a "soft roaming" is where the mesh network passively opens a roaming window to the client that allows the client to use available information to roam to a stronger continuing with the example device, IEEE Similarly,

eccess point.

55 devices do support intelligent roaming, but some older version devices may only support 802.11r and 802.11k, but not BTM. Different capabilities of the devices should be factored in when adjusting the parameters in the pseudo

60 Dedicated Backhanl Link and Fault Tolerance Piff. 19 librarine an example diagram showing a back-hall link established between two mesh points (e.g., in the mosh network). Besides regular WLAN services (e.g., data packet forwarding to and from the gateway and the Internet) that are provided by the mesh network to client devices, in a number of implementations, the mesh points themselves in the mesh network can utilize one or more teleco 65 S. A Scorning Design of the Common of the Co

capabilities to follow or otherwise coordinate with the mesh network in performing intelligent reaming. As shown in Fig. 18A, all newer 1OS devices are advantised to suptown three 802.11k, 802.11c, and 802.11v Wi-Fi network stan-dards. As shown in FIG. 18B, some later version of Android

FIGS, 18A-18B are a list of known user devices with their

s tolerance to the mesh network (e.g., to provide redundancy segarist temporary interference, etc.). With simultancous reference to flow thems 2240, 2230, and 2250 illustrated in 162.224-222. Cearmple methods for performing switching and selection of dedicated backball in a mesh eleverok are further discussed below. These methods can be implemented user device (e.g., device 134a) and the mesh points. Depending on the embodinents, the controlling entity may be centralized (e.g., on the main mesh point 112a, FIG. 1A), distributed among the mesh points (e.g., on mesh points tion circuits to form one or more dedicated backhaul links among the mesh points. In some examples, such backhaul links may be used to perform control and management functions, for example, the controlling entity to instruct a mesh point to execute a roaming decision for a client. In addition or as an alternative, such backhaul links can be utilized to provide more throughput, and/or to provide fault in conjunction with the software application that runs on the and performed by a controlling entity of the mesh network

112a-112a, FIG. TA), and/or remotely controllable (e.g., via 20 swit a remote server that is in the WAN IN Network 12.12b).

Ance specifically, in some embodiments the mesh points a commany be equipped with one or more of a powerline communication circuit (e.g., HomePlay 1.0, A.y. or AV2 compliant), a dedicated 5 GHz radio circuit, and/or a sub-12 bod GHz radio circuit, and/or a sub-13 bod GHz radio circuit, and/or sub-12 bod GHz radio circuit, and/or sub-13 bod GHz radio circuit, and/or sub-13 bod GHz radio circuit, and/or sub-13 bod GHz radio circuit and/or sub-13 bod GHz with a capability to combine the general purpose 2.4 GHz and 5 wood GHz WLAN radios with dedicated backbaul circuits to form be s different parts of the mesh network. For example, two mesh 30 points may be connected using powerline with another two mesh points may be connected using the 2.4 GHz or 5 GHz WLAN radio. Fault tolerance mechanisms are built in to the system such that, for example, when the dedicated link is not functioning or when the performance of dedicated link is significantly below the 2.4 GHz or 5 GHz radio that device

mine whether switching to an alternative backfault is drain- as agg able. The method starts by monitoring, and measuring the current backhaul. If there are already data packets in communication (Stop 2204), then measurement can be performed on the existing data packets (Stop 2204). If there is no or not enough active data communication, then, similar to ite rate estimation techniques described above, test packets and can be sent for the measurement of backhaul performance 50; uses to communicate to clicar, the best communication link can be used as the backbuil link.

Link measurement techniques, which are described above, can be utilized here to measure or estimate the above, can be utilized here to measure or estimate the above, can be utilized here to measure or estimate the above, can be utilized here to measure or estimate the above, can be utilized here to measure or estimate the above, and the pressible link options, to enable the selection of the best suitable backknott link. Flow chart 2200 shows an example method for evaluating current backhaul to deter-(Step 2206).

bockinal and the quality threshold may vary based on the proport the behalf (e.g., Powelline, sia).-IG, and proport 50. He estimated rate in the current backharil is below a quality threshold expected in the type of the backharil, then the strength point stars to seek for a better backharil (step a spartific mesh point stars to seek for a better backharil (step a spartific mesh point stars to seek for a better backharil (step a symming tree protocol (ST)) can be used it of the estimated rate is acceptable (e.g., above the partition of the protocol (ST)) and the estimated rate is acceptable (e.g., above the partition of the part (Step 2208). Thereafter, the estimated rate is compared to a subner/virtual LAN (VLAN), but quality threshold specific for the type of the buckhanl that is mig or dynamic routing to agging currently used (Step 2210). Similar to what has been so links. Is some embodiments that described above, the function for rate estimation for the Then, the link speed of the backhaul can be measured by using, for example, the aforementioned rate estimation techniques. For example, TX rate, RSSI, and PER can be measured to perform rate estimation on the current backhaul

quality threshold), then at least temporarily there is no need to switch the backhaul (Styo 2214). Then archade can be recented from time to time, for example, every 60 minutes, can be triggered by events such as a predetermined number. via the backhaul within a certain period, or can be triggered by any other suitable mechanism.

succinity indication (Sept. Acad.) (e.g., necation to assured in general to a soviching is fairly limited). However, if the estimated rate of an alternative backhaul is larger than the vernern backhaul by a certain annount (Step 2234), then an absolute value is compared to the estimated rate of the alternative backhaul is not pager than an absolute amount, the alternative backhaul is not larger than an absolute amount, the alternative is only considered as a secondary backhaul (Step 2236). If the estimated rate of the alternative is only considered as a secondary backhaul (Step 2236). If the estimated rate of the alternative backhaul is not larger than an absolute amount, the alternative so withisted to link a sharmfave backhaul passes the two criteria described above, then the current backhaul can have withisted to link a sharmfave backhaul passes the wo criteria described above, then the current backhaul can also be used to determine the best mest luptoin and the amount of raffic they paremeters can include: the number of clients that are paremeters ean include: the number of clients that are connected to each mest luptin and the amount of raffic they seem to have a successive the communication frequency band that is used by the clients and such frequency benefind effects on the backhaul channel; delay and jitter, requirements for the backhaul channel; delay and jitter, requirements for the hy any other suitable mechanism.

Plow chart Z3201 is an example method for finding an alternative backhaul. When the mesh point determines that in 10 an alternative backhaul. When the mesh point determines that consider the cavaliant other backhaul is desirable, it starts to measure and evaluate other backhaul channels (Step 2232). Similar to the memory on the alternative backhaul of Diffs that the RSSI and be method tilnstrative backhaul or per backhaul channels (Step 2232). Additionally, the Internet speed or a tanget the 1s transmission mae (discussed above) can be taken into consideration. If the estimated rate of an alternative backhaul is not longer than the current backhaul by a certain amount (Step 2234), then the alternative is only considered as a secondary hackhaul (Step 2236) (e.g., because the benefit of

traffic type that each client is supporting; the coexistence of 40 backhaul channel(s) with the Internet service, and the coexistence of backhaul channel with clients. 30

The methods in some cases, a combination of different between the contraction of different between the some points. As such the carton cannot be used between two mesh points. As such the carton cannot cannot be used between the beach of the caraport layer. In addition, the deficient beaching may be used for different clients. More specifically, the dedicated beachant technique introduced perherin can be aggregated with other available communication. Specifically, the dedicated beachant technique introduced perherin can be aggregated with other available communication. Specifically, the dedicated beachant for the burnoft intrider art to story convening and S4G; powerfine, 2.4 and SG; subt G and 2.4G; subt G and ing, known routing strategies such as equal-cost

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priority may be used to give priority depending on channel
roughing, traffic, and QoS parameters. The Rapid Spanning
Thea Provocol (which is described in the 1BEB 800.1, We
standards) can also be used. Other example link agaregation
mechanisms that can be used in the mesh network backbaul
links includie. Multi Path TCP (when TCP agapogation is possible), IEEE 802.3ad Link Aggregation Control Protocol (IACP); and Port Aggregation Protocol (PAgP). Note that, for the embodiments that utilize powerline communication as dedicated backhaul, the TPUT of the

continuations of contents of contents of the c 15 20

imited, or in some implementations, powerline communia 20 in cackin may be avoided in the entirety.

Various frequency band in sub-1 GiFramy be also be used for backball links in the mesh network to extend the range. Examples include 902-928 McHz in the United States, and Examples include 902-928 McHz in the United States, and Examples include 902-928 McHz in the United States, and embodiments, IEEE 802.11st and 863-870 McHz in Europe, in some 30 embodiments, IEEE 802.11st can be used. In yet another alternative, it is possible to convert on existing IEEE 802.11st can be used. In yet another alternative, it is possible to convert on existing IEEE 802.11st cacking in a sub-1G frequency band. In certain cases, if the sub-1G frequency band is not available in a country or if there is too much interference or noise in the sub-1G band, the fault tolerant mechanism on fall back to 2.46365, powerline or pother available backbaul links.

a relatively wide frequency band and, as a result, with proper hardware and software design, it is possible to place more than one radio in 5 GHz in a single device without creating unacceptishly large interference. One of such example is an shown in FGR 19. In such cases, a part of 5 GHz requency band can be dedicated for backhaul purposes. Mondledess, the mesh network can still montior the noise and interference in the frequency band by checking the link statistics, and switch off to other available back-up channels when 45

20 65 proper.

Note that, in selecting the backbaul, a general bierarchy may be observed to avoid disruption. Moreover, generally speaking, it spericable no tous segencial purpose wireless communication resources (i.e., that are used for servicing data traffic from and to the clients) for backbaul purposes. Flow chart 2250 is an example method for implementing a brackans selection interactly. In the illustrated example, first, only if the current backbaul is underperforming (e.g., elbeys below a certain threshold) (Step 2252) then is an alternative backbaul considered. Otherwise, the most point may continue to use the current backbaul (Step 2253), lift is an end point may continue to use the current backbaul (Step 2254). If the forming then is the general purpose wireless resource (i.c., effect facing resource considered. If the client facing resource can provide a rule that is more than a second threshold (Step 2362), then the most point can utilize a alternative backhaul is better than the threshold, then the alternative backhaul can be used (Step 2258). On the other select portion of the client facing resource as the backhaul.

Note that the second threshold may be different from the first hand, only if all alternative backhauls are also underperhreshold. In one example, since the client facing resource

then would be serving both front end and back end traffic, the second threshold is higher then the first threshold. If the client facing resource cannot satisfy the second threshold, then the mesh point can indicate (e.g., on the software from the mesh point can indicate (e.g., on the software papilication) that it has a bad backbaul (Shep 2186).

With the techniques introduced herein, including automated mesh point survey and guided installation for assist; on the installation and configuration of a wireless mesh into the international methods an integral solution where multiple methods, link rate estillation, reauting, and dedicated back the otherwises, local area nework, (WLAN) mesh point of the wireless for all area nework (WLAN) mesh point one of the control area to selected by the potential dead spots, such as a home or an office.

### CONCLUSION

Unless contrary to physical possibility, it is envisioned that (i) the embedskiese described above may be performed in any sequence and/or in any combination, and that (ii) the expronents of respective embodiments may be combined in any manner.

The rechniques introduced above can be implemented by

noterun merkenian can fall back to 2.4G/3G, powerline or other sevaluble backhall links.

Other sevaluble backhall links, to 2.4G/3G, powerline or other sevaluble backhall links.

In sume implementations, a dedicated 5 GHz radio is used 3. 4 "machine-readable medium", as the term is used breein a redelicated backhall. 5 GHz ISM band is a relatively wide frequency band and as a result, with proper a present properties and a result with proper a redelicated backhall in a relative to place more processible by an extract design, it is possible to place more processors, etc.) For example, a machine due to be of such evaluable in the mean in FIG. 19, in such cases, a part of 5 GHz frequency flowed to such evaluable in the mean in FIG. 19, in such cases, a part of 5 GHz frequency band can be dedicated for backhall purposes. Nonetheless, the mean of the mean still monitor the noise and interference. One of such evaluable is machine discussions and by checking the link statistics.

Proceeding the processors are a still monitor the noise and interference.

Proceeding the processors are described to the acknowledge of the frequency band and by checking the link statistics. programmable circuity programmed/configured by soft-saver and/or firmwase, or entitivity by excell-purpose cir-cuitry, or by a combination of such forms. Shot special-purpose circuitry (if any) can be in the form of, for example, now or more explication-specific integrated circuits (ASICA), programmable logic devices (PLIS), field-programmable 30 gate arrays (IPQAS), etc. Software or firmware to implement the techniques intro-duced here may be stored on a machine-readable storage

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Note that any and all of the embodiments described above can be combined with each other, except to the extent that it may be stated otherwise above or to the extent that any such embodiments might be mutually exclusive in function and/or structure.

Although the present invention has been described with reference to specific exemplary embediments, it will be recognized that the invention is not limited to the embodimenis described, but can be practiced with modification and alteration within the spirit and scope of the appended claims. St Accordingly, the specification and drawings are to be regarded in an illustrative sense rather than a restrictive.

1. A computer-implemented method for adjusting wireless renewater coverage in a writeries mesh entowerk formed with one or more mesh points, the method comprising, establishing, by a mobile application on a user device of a user, a wireless communication with a first mesh 3

causing, by the mobile application, the first mesh point to measure an external network connection speed;

Page 756 of 954 PageID #:

determining by the mobile application, a larget data rate of the wireless mesh network based on the measured sorterwing the unchard based on reading by the mobile application, a link quality between the first mesh point based on a link quality between the first mesh point and the user device as one to forecast a link quality between the first mesh point and a teach of the second mesh point if the performed link estimation is below a lower threshold many of the user device, a correspond to be decided to the second mesh point in size a termer location of the user device, a correspond to be decided to the second mesh point in size a condition of the second mesh point in size a correct location of the user device, a correspond to be detailed to the second mesh point based on comparing a result of the performed link estimation is above an use device, a possible or the performed than a procletomized, with the display of the user device, the user device, a possible possible and the user device and the performed possible and the user device and the performed possible possibl

compass, or a gravity sensor.

5. The method of claim 1, wherein the link estimation is performed based on a dishahes of lith performance that reconvergences wireless performance of particular type of the most device to a mesh point.

6. The method of claim 1, wherein the wireless commun. 3. 18.

incritor with the first mesh point is established using a base default network configuration, the method further comprise.

new network configuration comprising at least one of: 4 a new service set identifier (SSID) or a new network password; and updating the first mesh point with the new network requiring, via a display of the user device, an input of a

configuration.

The method of claim 6, further comprising:

"The method of claim 18, wherein each mesh point in upon receiving an indication of installation of the second mesh point mesh isning, but he mobile application, the wireless communication with the second mesh point.

8. The method of claim 7, further comprising:

"The method of claim 7, further comprising communication with the second mesh point in the method of claim 7, further comprising."

"The method of claim 18, wherein each mesh point in the wireless communication with the second mesh point in the mean second mesh point in the curvey's configuration.

17. The method of claim 1, wherein the link estimation is performed based on a decision flow that factors in at least a received signal strength indicator and a physical layer data least a received signal strength indicator and a physical layer 30 data rate.

18. The method of claim 1, further comprising:
saked on the like estimation, cassing an adjustment in a
board on the like estimation, cassing an adjustment in a
connection between the user device and a respective
most point to which the user device is currently con-

40 19. The method of claim 18, wherein the adjustment includes running the user device to another mesh point in the wireless mesh network, changing a frequency hand that the user device is connected with the wireless mesh network, or a combination thereof.

# EXHIBIT 9

Page 1

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

VS.

Case No. 22-981-RGA-JLH

NETGEAR, INC.,

Defendant.

\_\_\_\_\_

ZOOM DEPOSITION OF NETGEAR'S 30(b)(6) CORPORATE

REPRESENTATIVE & INDIVIDUALLY - ANNA LAM

(Reported Remotely via video & Web videoconference)

Palo Alto, California (Deponent's location)

Friday, January 5, 2024

#### STENOGRAPHICALLY REPORTED BY:

REBECCA L. ROMANO, RPR, CSR, CCR California CSR No. 12546
Nevada CCR No. 827
Oregon CSR No. 20-0466
Washington CCR No. 3491

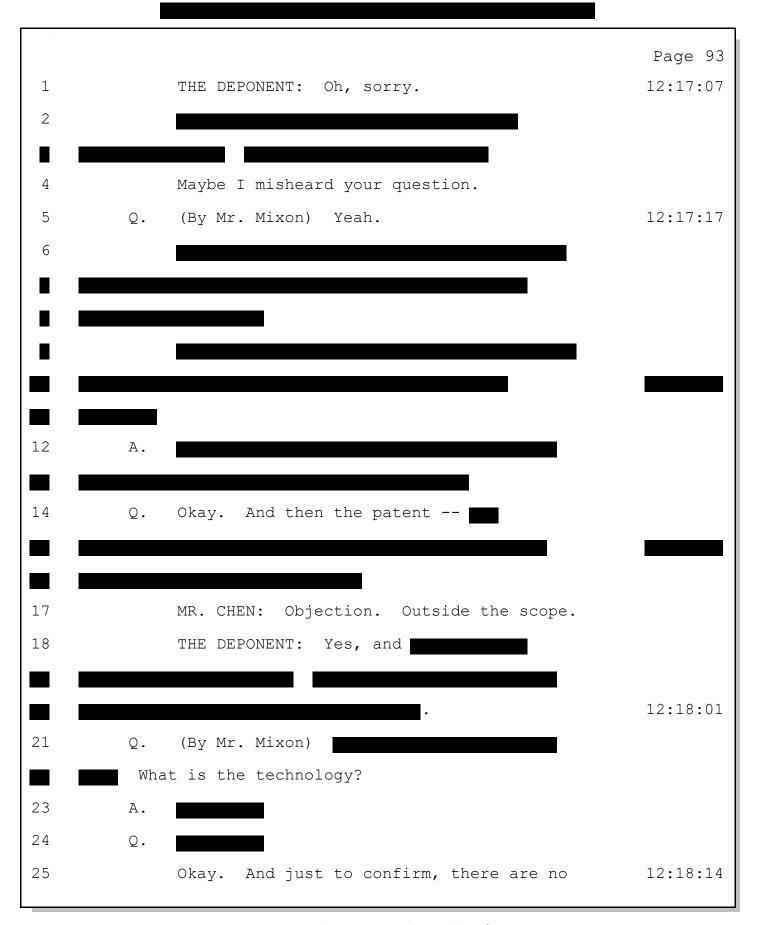
JOB NO.: 8475

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Page 2
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             IN THE UNITED STATES DISTRICT COURT
 2
                  FOR THE DISTRICT OF DELAWARE
 3
 4
     TRACKTHINGS LLC,
 5
          Plaintiff,
 6
                                  Case No. 22-981-RGA-JLH
               VS.
 7
     NETGEAR, INC.,
 8
          Defendant.
 9
10
11
12
13
               DEPOSITION OF ANNA LAM, taken on behalf
     of the Plaintiff, with the deponent located in Palo
14
15
     Alto, California, commencing at 9:50 a.m., Friday,
     January 5, 2024, remotely reported via video & Web
16
     videoconference before REBECCA L. ROMANO, a
17
     Certified Shorthand Reporter, Certified Court
18
19
     Reporter, Registered Professional Reporter.
20
21
22
23
24
25
```

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Page 3
 1
                     APPEARANCES OF COUNSEL
 2
     (All parties appearing via Web videoconference)
 3
 4
     For the Plaintiff - TrackThings LLC:
 5
          SCHULTE ROTH & ZABEL
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          BY:
                JOHN MIXON
 7
          BY:
               CHRISTOPHER M. GERSON
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     For the Defendant - NETGEAR, Inc.:
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          Palo Alto, California 94304
21
          (650) 843-5480
22
          rchen@cooley.com
23
24
     ALSO PRESENT:
25
          Betsy Gomez, Videographer
```

		Page 91
1	Yeah, that's correct.	12:13:32
2	Q. (By Mr. Mixon) Okay. Does NETGEAR have	
3	any license agreements, outside of the litigation	
4	settlement context, that relate to nonwireless	
5	technology patents?	12:13:51
6	MR. CHEN: Objection. Outside the scope.	
7	THE DEPONENT:	
8	Q. (By Mr. Mixon) Okay. So just to	
9	clarify,	
13	A.	
14		
	we have	
18	wireless patents ourselves, in that way, it might	
19	be, quote/unquote, "related."	
20	But, yeah, I just want to make that	12:15:05
21	clarification.	
22	Q. Okay. Who is the party?	
23	A.	
24	Q. Okay. Does NETGEAR you mentioned	
25	earlier that NETGEAR has its own wireless	12:15:22

1 technology patents.  2  4  A.  12:15:4  6  Q. Okay. And do any you mentioned that	
A.  12:15:4  Q. Okay. And do any you mentioned that	10
12:15:46 Q. Okay. And do any you mentioned that	łΟ
12:15:46 Q. Okay. And do any you mentioned that	10
6 Q. Okay. And do any you mentioned that	10
7	
8 Do any of those patents relate to mesh	
9 WiFi technology?	
10 A. I am sure our portfolio has patents 12:16:0	0 (
11 related to that technology. I don't know that	
12 portfolio does.	
Q. Okay. And you mentioned that	
correct?	
17 A. Correct.	
18 Q.	
MR. CHEN: Objection. Outside the scope.	
THE DEPONENT:	
Q. (By Mr. Mixon)	
Okay.	
24	
MR. CHEN: Objection. Outside the scope. 12:17:0	)5



,		Page 110
1	MR. CHEN: Objection.	01:25:08
2	THE DEPONENT: For that one, our business	
3	folks were we got input from our business folks,	
4	because it relates to our products currently.	
5	Q. (By Mr. Mixon) Okay. And then I have	01:25:22
6	similar follow-up questions	
7	Why did and this one is a	
8		
	?	
10	A. Yes.	01:25:42
11	Q. Okay. And	
13	MR. CHEN: Objection. Outside the scope.	
14	THE DEPONENT: If I recall correctly, I	
15	think, in this case,	
17	Q. (By Mr. Mixon) Okay. And what so to	
18	the extent that	
		01:26:37
21	MR. CHEN: Objection. Outside the scope.	
22	Calls for a legal conclusion.	
23	THE DEPONENT:	
25	Q. (By Mr. Mixon) Okay. Are any of	01:26:49

Page 111 1 NETGEAR's products that are --3 MR. CHEN: Objection. Outside the scope. 4 Calls for a legal conclusion. 5 THE DEPONENT: What's the question again? 01:27:05 6 Can you repeat that? (By Mr. Mixon) Yeah. Ο. 8 So is any of the -- is any of 9 NETGEAR's --12 MR. CHEN: Objection. Outside the scope. Calls for a legal conclusion. 13 THE DEPONENT: Again, 14 17 (By Mr. Mixon) Okay. So was it a Q. 18 lump-sum license? 19 MR. CHEN: Objection. Outside the scope. 01:27:54 2.0 THE DEPONENT: I don't remember. 21 24 (By Mr. Mixon) Okay. Do you recall --Q. 01:28:07 25 do you recall how much?

,		1
		Page 112
1	A. I do not recall.	01:28:11
2	MR. CHEN: Objection. Outside the scope.	
3	THE DEPONENT: Sorry.	
4	MR. CHEN: That's okay.	
5	Q. (By Mr. Mixon) Okay. And you don't	01:28:16
6	know you don't know if it was this was like a	
7	per-product lump sum, like if it was somehow	
8	calculated based on the units of NETGEAR's	
9	products?	
10	MR. CHEN: Objection.	01:28:32
11	THE DEPONENT: It was definitely	
12	MR. CHEN: Outside the scope.	
13	THE DEPONENT:	
17	Q. (By Mr. Mixon) And the same is true for	
18	what	
20	MR. CHEN: Objection. Outside the scope.	01:28:58
21	Calls for legal conclusion.	
22	THE DEPONENT: It was not.	
		01:29:11

,		Page 113
1	this.	01:29:15
2	Q. (By Mr. Mixon) Okay.	
4	MR. CHEN: Objection. Calls outside	
5	the scope.	01:29:20
6	THE DEPONENT:	
9	I don't remember exactly.	
10	Q. (By Mr. Mixon) Okay. And were you	01:29:30
11	involved in drafting or negotiating the agreement?	
12	MR. CHEN: Same objection.	
13	THE DEPONENT: I was.	
14	Q. (By Mr. Mixon) And was anyone else at	
15	NETGEAR involved in drafting or negotiating the	01:29:42
16	agreement?	
17	MR. CHEN: Same objection.	
18	THE DEPONENT: Were they involved?	
19	Yeah, I asked for input very various	
20	people, but I was the primary person involved.	01:29:57
21	Q. (By Mr. Mixon) Okay. I think that gets	
22	at those questions.	
23	MR. MIXON: I am going to introduce a	
24	document identified as Exhibit 7 titled	
		01:30:13

Page 197 1 I, Rebecca L. Romano, a Certified Shorthand 2 Reporter of the State of California, do hereby 3 certify: That the foregoing proceedings were taken 5 before me at the time and place herein set forth; 6 that any witnesses in the foregoing proceedings, 7 prior to testifying, were administered an oath; that a record of the proceedings was made by me 8 9 using machine shorthand which was thereafter 10 transcribed under my direction; that the foregoing 11 transcript is true record of the testimony given. 12 Further, that if the foregoing pertains to the 13 original transcript of a deposition in a Federal 14 Case, before completion of the proceedings, review 15 of the transcript [X] was [ ] was not requested. I further certify I am neither financially 16 17 interested in the action nor a relative or employee of any attorney or any party to this action. 18 19 IN WITNESS WHEREOF, I have this date 20 subscribed my name. 21 22 Dated: January 10th, 2024 23 24 Rebecca L. Romano, RPR, CCR 2.5 CSR. No 12546

# EXHIBIT 10

			BATES NO.	BATES NO.	
PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	(beg)	(end)	NETGEAR'S OBJECTIONS
267		Exhibit C-9 - Claim Chart for U.S. Patent 10,107,893 (the "893 Patent") in view of Bluetooth Spec. 802.15.1		, ,	
268		Exhibit C-10 - Claim Chart for U.S. Patent 10,107,893 (the "'893 Patent") in view of Bluetooth Spec.			
269	2021-10-01	Initial Conference before Judge Katherine Polk Failla, dated October 1, 2021			
270	2023-06-21	Markman Hearing - 101 Motion Transcript before Judge Jennifer L. Hall, dated June 21, 2023			
271	2023-06-28	Continuation of Markman Hearing before Judge Jennifer L. Hall, dated June 28, 2023			
272	2023-11-06	Discovery Dispute Hearing Transcript before Judge Jennifer L. Hall, dated November 6, 2023			
273	2025-01-08	Discovery Dispute Hearing Transcript before Judge Jennifer L. Hall, dated January 8, 2025			
274	2025-02-19	Summary Judgment Hearing Transcript before Judge Jennifer L. Hall, dated February 19, 2025			
275	2023-11-28	Sandeep Harpalani Deposition Transcript			
276	2023-11-01	Defendant Netgear, Inc.'s Objections and Responses to Plaintiff TrackThings LLC's First Notice of Deposition Pursuant to Rule 30(b)(6)			
277	2015-10-17	Netgear Orbi P1 Exit (Jonathan Wu and Michael Chen)	NETGEAR-TRACK-007040	NETGEAR-TRACK-007071	
278	2016-10-19	Netgear Orbi Mini Router and Bundles - RBR30, RBS30, RBW30, RBK40 and RBK30 (P1 Exit)	NETGEAR-TRACK-007381	NETGEAR-TRACK-007405	
279	2021-01	Orbi WiFi 6 Survey			
280	2021/2022	Orbi WiFi 6E + Orbi WiFi 6 Survey			
281	2018-09-26	Netgear WiFi Survey	TT-N-0082458	TT-N-0082475	
282	2022-12-16	YouTube Orbi Quad band Mesh WiFi6E System screenshot https://www.youtube.com/watch?v=4T2ACBZOe3M			
283	N/A	Netgear Messaging Brief - Orbi Mesh WiFi System (4-pack) RBK14	NETGEAR-TRACK-009459	NETGEAR-TRACK-009467	
284	2023-11-24	Netgear Daisy Chain Webpage (printed November 24, 2023)			
		https://www.netgear.com/hub/wifi/mesh/daisy-chain/			
285	2023-12-06	Aaron Johnson Deposition Transcript			
286	2023-09-06	Plainiff Trackthing's First Notice of Deposition of Defendant Netgear, Inc. Pursuant to Rule 30(b)(6)			
287		Excel - Re - Total US Summary and Cost Summary	NETGEAR-TRACK-009760	NETGEAR-TRACK-009760	
288		Netgear Excel spreadsheet (sales and revenue)	NETGEAR-TRACK-009987		
289		Excel - Product List	NETGEAR-TRACK-009862	NETGEAR-TRACK-009862	
290		Excel - Subscriptions by Quarter	NETGEAR-TRACK-009988	NETGEAR-TRACK-009988	
291		Excel - Service Revenue Carve Out	NETGEAR-TRACK-011071	NETGEAR-TRACK-011071	
292	2017-04-26	Netgear, Inc. NasdaqGS:NTGR FQ1 2017 Earnings Call Transcripts	TT-N-0082098	TT-N-0082113	
293	2023-12-08	Ravindra Bhilave Deposition Transcript			
294	2023-12-05	Amended Notice of Deposition of Ravindra Bhilave			
295	2023-11-30	Ravindra Bhilave LinkedIn Profile (printed 11/30/2023)			
296	2022-10	WiFi7 Orbi 10, P1 Exit	NETGEAR-TRACK-008253	NETGEAR-TRACK-008287	
297	2022 11 20	Excel - Product List	NETGEAR-TRACK-011072	NETGEAR-TRACK-011072	
298	2023-11-30	WiFi 7 vs. WiFi 6. More Speed & Capacity (printed 11/30/2023) https://www.netgear.com/hub/technology/wifi-7-vs-wifi-6/			
299	2023-11-30	Orbi RBK853 vs. RBK863S Best-Selling Mesh Evolved (printed 11/30/2023)			
233	2023-11-30	https://www.netgear.com/hub/wifi/mesh/orbi-rbk853-vs-rbk863s/			
300	2023-12-13	Joseph Emmanuel Deposition Transcript			
301	2023-09-06	Plaintiff Trackthings' First Notice of Deposition of Defendant Netgear, Inc. Pursuant to Rule 30(b)(6)			
302	2023-12-05	Amended Notice of Deposition of Joseph Emmanuel			+
303	2023-12-03	Netgear website printout for whole-home mesh WiFi (printed 12/11/2023)			
505	2023-12-11	https://www.netgear.com/home/wifi/mesh/			
304	2023-12-11	Netgear website printout for Orbi Mesh and Orbi Pro Systems (printed 12/11/2023)			
50.	2025 12 11	https://www.netgear.com/support/product/orbi			
305	2023-12-11	Netgear website printout for Nighthawk Mesh WiFi 6 Systems (printed 12/11/2023)			
205	2022.45	https://www.netgear.com/support/product/nighthawk-mesh			
306	2023-12	Joseph Emmanuel LinkedIn Profile (printed December 2023)			
307	2023-12-07	"Patents" section of Joseph Emmanuel's LinkedIn Profile (printed 12/2023)	METOE A D. TD - CV. 202445	NETTOP A D. TT. COV. COOLEG	
308	1	Netgear - Orbi Whole Home AC1200 Mesh WiFi System Data Sheet RBK12	NETGEAR TRACK 000033	NETGEAR-TRACK-002120	
309	2010.06.05	Nighthawk Mesh WiFi 6 System Data Sheet MK62  Foxconn Confidential Nighthawk Mesh 2.0 diagrams	NETGEAR-TRACK-000938 NETGEAR-TRACK-010248	NETGEAR TRACK 010267	
310 311	2019-06-05 2020	Foxconn Confidential Nighthawk Mesh 2.0 diagrams  Netgear Orbi Whole Home Tri-band Mesh WiFi 6 Satellite Data Sheet RBS750	NETGEAR-TRACK-010248 NETGEAR-TRACK-004490	NETGEAR-TRACK-010267 NETGEAR-TRACK-004493	
311	2020	Foxconn Confidential RBR750 (Oorvo Version)	NETGEAR-TRACK-004490 NETGEAR-TRACK-010591	NETGEAR-TRACK-004493 NETGEAR-TRACK-010627	
313	2020-06-09	United States Patent 10,681,698 B2	NETGEAR-TRACK-010071	NETGEAR-TRACK-01002/	
313	2020-00-09	United States Fatelit 10,001,090 BZ			1

			BATES NO.	BATES NO.	
PTX	DATED	DESCRIPTION OF EXHIBITS AND WITNESSES	BATES NO. (beg)	BATES NO. (end)	NETGEAR'S OBJECTIONS
314	2023-12-10	Webpage: Level up your mesh Wi-Fi: A deep dive into Qualcomm Multi-Link Mesh [+video] (printed	V8/	Ç/	
		12/10/2023)			
		https://www.qualcomm.com/news/onq/2023/03/mesh-wi-fi-video-deep-dive-into-qualcomm-multi-link-mesh			
315	2019-02-20	Easy Mesh 11AX System PO Exit	NETGEAR-TRACK-006332	NETGEAR-TRACK-006349	
316	2023-12-11	Webpage - Where should I place my Orbi satellite? (printed 12/11/2023)			
		https://kb.netgear.com/31029/Where-should-I-place-my-Orbi-satellite			
317	2023-12-11	Webpage - How do I install my Netgear Nighthawk Mesh WiFi 6 products? (printed 12/11/2023) https://kb.netgear.com/000061554/how-do-i-install-my-netgear-nighthawk-mesh-wifi-6-products			
318	2023-12-11	Webpage - How do I sync an add-on satellite with my Orbi Pro router? (printed 12/11/2023)			
510	2023 12 11	https://kb.netgear.com/000046289/How-do-I-sync-an-add-on-satellite-to-my-Orbi-Pro-router			
319	2019-05-14	United States Patent 10,292,159 B2			
320	2023-12-11	Webpage - What do the LEDs on my Orbi router and satellite mean? (printed 12/11/2023)			
321	2022 12 11	https://kb.netgear.com/31030/What-do-the-LEDs-on-my-Orbi-router-and-satellite-mean  Webpage - What is daisy chain and how does it work with my Orbi WiFi System or Nighthawk Mesh			
321	2023-12-11	Webpage - What is daisy chain and how does it work with my Orbi WiFi System or Nighthawk Mesh System? (printed 12/11/2023)			
		https://kb.netgear.com/000048458/What-is-daisy-chain-and-how-does-it-work-with-my-Orbi-WiFi-System-			
		or-Nighthawk-Mesh-System			
322	2023-12-15	Steve L. Gielty Deposition Transcript	_		
323	2023-09-06	Plaintiff Trackthings' First Notice of Deposition of Defendant Netgear, Inc. Pursuant to Rule 30(b)(6)			
324	2023-12-05	Amended Notice of Deposition of Steve Gielty			
325	2023-12-13	Netgear's Whole Home Mesh WiFi webpage (printed 12/13/2023)			
		https://www.netgear.com/home/wifi/mesh/			
326	2023-12-11	Business Mesh WiFi Systems webpage (printed 12/11/2023)			
327	2023-12-11	https://www.netgear.com/business/wifi/mesh/ Netgear Orbi Mesh and Orbi Pro Systems webpage (printed 12/11/2023)			
327	2023-12-11	https://www.netgear.com/support/product/orbi			
328	2023-12-11	Nighthawk Mesh WiFi 6 Systems webpage (printed 12/11/2023)			
		https://www.netgear.com/support/product/nighthawk-mesh			
329	2023-12	Steve Gielty LinkedIn profile (printed 12/2023)			
330	2023-12-13	Orbi App - Orbi Setup webpage (printed 12/13/2023) https://www.netgear.com/home/services/orbi-app/			
331	2023-12-13	Netgear Nighthawk App webpage (printed 12/13/2023)			
		https://www.netgear.com/home/services/nighthawk-app/			
332	2023-12-13	Introducing Netgear's Insight App webpage (printed 12/13/2023)			
222	2022 42 42	https://www.netgear.com/hub/business/network/netgears-insight-app/			
333	2023-12-13	Orbi Login & Setup webpage (printed 12/13/2023) https://www.netgear.com/home/services/orbilogin/			
334	2023-12-13	Netgear Orbi - WifFi System App webpage (Google) (printed 12/13/2023)			
		https://play.google.com/store/apps/details?id=com.dragonflow.android.orbi&hl=en_US&gi=us			
335	2023-12-13	Netgear Nighthawk - WiFi App webpage (Apple) (printed 12/13/2023)			
226	2023-12-13	https://apps.apple.com/us/app/netgear-nighthawk-wifi-app/id1124666597			
336	2023-12-13	Netgear Nighthawk - WiFi Router webpage (Google) (printed 12/13/2023) https://play.google.com/store/apps/details?id=com.netgear.netgearup&hl=en			
337	2023-12-13	Netgear Insight on the App Store webpage (Apple) (printed 12/13/2023)			
		https://apps.apple.com/us/app/netgear-insight/id1186392308?platform=iphone			
338	2023-12-13	Netgear Insight - Apps on Google Play (Google) (printed 12/13/2023)			
339	2023-12-12	https://play.google.com/store/apps/details?id=com.netgear.insight&hl=en_US≷=US  Webpage: How do I sync a satellite that came with my Orbi Pro WiFi System? (printed 12/12/2023)			
339	2023-12-12	https://kb.netgear.com/000046288/How-do-I-sync-a-satellite-that-came-with-my-Orbi-Pro-WiFi-System			
	1	, , , , , , , , , , , , , , , , , , , ,			
340 341	2022-06	Excel - Satellites and Topology WiFi7 Orbi9 P1 Exit	NETGEAR-TRACK-011070 NETGEAR-TRACK-008321	NETGEAR-TRACK-011070 NETGEAR-TRACK-008361	
341	2022-06	Anna Lam 30(b)(6) Deposition Transcript	NETUEAR-TRACK-008321	NETGEAR-TRACK-008361	
343	2023-09-06	Plaintiff Trackthings' First Notice of Deposition of Defendant Netgear, Inc. Pursuant to Rule 30(b)(6)			
344	2024-01-03	Notice of Deposition of Anna Lam	•		
345 346	2017-10-05	Anna Lam Linkedin Profile  Settlement and Non-Exclusive Patent License Agreement between Magnacross LLC and Netgear, Inc.	NETGEAR-TRACK-009932	NETGEAR-TRACK-009946	
540	2017-10-03	Section on and Non-Exclusive ratem License Agreement between inagnacioss LLC and neigear, Inc.	NETGEAR-TRACK-009932	NETGEAR-TRACK-009940	
				1	

# EXHIBIT 11

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	)
Plaintiff, v.	) ) C.A. No. 22-981-JLH ) (CONSOLIDATED)
NETGEAR, INC.	) Jury Trial Demanded
Defendant.	) ) )
	)

SUPPLEMENTAL EXPERT REPORT OF HENRY HOUH, PH.D.

May 19, 2025

#### 

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As to speed and reliability, in the Holzen Second Supplemental Report, Mr. Holzen 22. alleges that the Accused Products "achieve additional speed and [] improved reliability—which is consistent with the technical benefits of routing user data using differentiated software radios (or transceivers) gained from practicing the '442 Patent." (Holzen Second Supplemental Report at ¶ 17.) This is also technically incorrect and unsupported. The alleged advantages that Mr. Holzen attributes to the '442 Patent are advantages of mesh Wi-Fi that predate the '442 Patent. (See, e.g., Akyildiz& Wang at S23 ("This feature brings many advantages to WMNs, such as low up-front cost, easy network maintenance, robustness, reliable service coverage, etc."); id. at S28 ("In a home or small to medium business environment, the most popular network access solution is still DSL or cable modem along with IEEE 802.11 access points. However, compared with this approach, WMNs have many potential advantages: lower cost, higher speed, and easier installation."); see, e.g., Sichitiu 2005 (identifying reliability and coverage as already achieved benefits of mesh).)<sup>6</sup> To my knowledge, neither Dr. Bims nor Mr. Holzen has done any analysis that suggests that specific implementation of the '442 Patent would achieve any additional benefits to speed, reliability, and/or coverage that are not attributable to pre-existing mesh technology.

<sup>&</sup>lt;sup>6</sup> Moreover, NETGEAR's devices have many additional features that lead to their improved speed and reliability, including improved performance based on design characteristics such as size, improved performance based on using a dedicated backhaul (technology patented by NETGEAR) (see, e.g., U.S. Patent Nos. 9,967,884; 10,681,698; 10,278,179), improved reliability from a stable design proven over time, and increased security and privacy features. (See, e.g., What is Mesh WiFi?, Netgear, <a href="https://www.netgear.com/hub/technology/what-is-mesh-wifi/">https://www.netgear.com/hub/technology/what-is-mesh-wifi/</a> (NETGEAR-TRACK-011542 at -11545 ("Did you know? NETGEAR's Orbi Mesh WiFi Systems feature a dedicated WiFi band for the network backhaul. Known as Tri-Band or Quad-Band technology, the unique technology ensures ultra-fast performance from Orbi Mesh Systems, even with hundreds of devices connected.")); Understanding the Problem: Thick Walls and Weak WiFi Signals, Netgear, <a href="https://www.netgear.com/hub/wifi/mesh/mesh-for-thick-walls/">https://www.netgear.com/hub/wifi/mesh/mesh-for-thick-walls/</a> (last visited May 14, 2025).)

Fi standard being used. (*Id.* (data sheets acknowledge that advertised speeds are based on capabilities of 802.11 standard being used).)

- 26. From a technical perspective, the is more comparable to the eero Beacon because both use the same Wi-Fi standard (Wi-Fi 5), both are dual-band, and both can only be used as satellites because they are not designed for a wired connection. (See, e.g., eero Data Sheet).) A person of skill in the art would recognize and eero Beacon Data Sheet and has the technical advantage of using higher level components, such as a better that the processor and multiple high-performance internal antennas, and includes additional features such as WPS (Wi-Fi Protected Setup) that are not included for the eero Beacon. (Compare eero and eero Beacon Data Sheet (showing use of 700 MHz quad-core processor), with Data Sheet (NETGEAR-TRACK-009631-34 at -9634) (showing use of 710 MHz quad-core processor, "Two (2) high-performance internal antennas," and "Push Button WPS and SYNC support").) Although both use the same wireless standard, the better components and design is a likely reason that NETGEAR advertised "speeds up to 1.2Gbps" including 400 Mbps for the 5GHz band ( Data Sheet) and eero only advertised that the eero Beacon provided speeds of 350 Mbps (https://eero.com/shop/eero-beacon).
- 27. Based on my review, comparing the capabilities of the Orbi and Nighthawk products to the eero products suggests that the advantages of the NETGEAR products are unrelated to '442 Patent. For example, comparing (i) an eero Wi-Fi 6 product, such as the eero Pro 6 (which uses 802.11ax 2.4GHz and 5 GHz), with (ii) NETGEAR Wi-Fi 6 products (which also use 802.11ax 2.4GHz and 5 GHz) shows that the advantages of the NETGEAR products are based on the fact that NETGEAR included things like a dedicated backhaul (NETGEAR patented

technology), implemented optional features such as target wait time (TWT), added advanced security features, and better underlying components. (Compare, e.g., Orbi Pro WiFi 6 Family Data Sheet and Orbi RBS850 Data Sheet (NETGEAR-TRACK-004538-41), with eero Pro 6 Data Sheet.) For example, as to components, while the eero Pro 6 only uses a 1.6 GHz processor, the Orbi RBS850 uses a 2.2 GHz Processor. (Id.) Likewise, comparing (i) an eero Wi-Fi 6E product, such as the eero Pro 6E (which uses 802.11ax 2.4 GHz, 5 GHz, and 6 GHz), with (ii) a NETGEAR Wi-Fi 6E product, such as the Orbi RBSE960 (which also uses 802.11ax 2.4 GHz, 5 GHz, and 6 GHz), shows that once again NETGEAR uses better components (a 2.2GHz quad-core processor as compared to eero using 1 GHz dual-core processor), more components (12 antenna as compared to 6 used by eero) and a dedicated backhaul to improve performance. (Compare Orbi RBSE960 Data Sheet (NETGEAR-TRACK-004544-48), with eero Pro 6E Data Sheet.) The Nighthawk products likewise used advanced features (like OFDMA) and better components (1.5 GHz quadcore processor) to improve performance. (See, e.g., Nighthawk MS80 Data Sheet (NETGEAR-TRACK-001472-77).) In my opinion, a person of skill in the art would also understand that some of the increased performance from NETGEAR's products relates to NETGEAR design choices, such as using larger product sizes which improve the signal distribution for increased coverage and reliability.

28. To do a proper technical analysis, Dr. Bims and Mr. Holzen needed to compare (i) a mesh Wi-Fi device that includes the functionality recited in the '442 Patent, with (ii) a mesh Wi-Fi device that <u>does not</u> include the specific functionality recited in the '442 Patent. To my knowledge, neither Dr. Bims nor Mr. Holzen performed any such analysis.

#### V. CONCLUSION

29. In my opinion, Mr. Holzen's analysis is not supported by a proper technical or logical analysis for the reasons stated above.

I declare under the penalty of perjury under the laws of the United States that the foregoing is true and correct to the best of my knowledge, information, and belief.

Henry H. Houh

May 19, 2025

#### **CERTIFICATE OF SERVICE**

I, Alexandra Leeper, Esquire, hereby certify that on May 21, 2025, I caused a copy of Supplemental Expert Report of Henry Houh, Ph.D. to be served on the following counsel of record in the manner indicated below:

#### **BY E-MAIL**

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<u>/s/ Alexandra Leeper</u> Alexandra Leeper

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

**JURY TRIAL DEMANDED** 

TRACKTHINGS LLC'S REPLY IN SUPPORT OF ITS MOTION IN LIMINE NO. 3

A defendant referencing its own patents at trial "could mislead the jury into believing that [the defendant's] patents give it the right to practice technology that is covered by those patents." *Sonos*, 2017 WL 5633204, at \*1. Such patents are not relevant to any claim or defense, and the risk of prejudice from their introduction is clear. Netgear opposes TrackThings' MIL 3 to exclude such patents, but fails to cite a single Delaware decision finding it permissible for a defendant to raise and reference its own patents at trial, whether for "noninfringement" or any other purpose.

Nor does Netgear raise any new or persuasive ground that would merit diverging from past precedent here. Netgear argues that it should be able to describe its innovative work on the accused devices, but that does not require Netgear to introduce particular *patents* to the jury. Netgear asserts that its patents are "relevant to multiple damages issues," but Netgear's damages expert does not rely on Netgear's patents in any of his reports. Opp. at 1. The out-of-district decision in Wonderland fails for the same reason, because the defendant's expert there did rely on such patents, whereas Netgear's expert did not. Compare Wonderland, 2014 WL 241751 at \*2 with Opp. Ex. 2 ¶¶ 166-170. Nor are Netgear's patents relevant to willfulness—the question here is not copying, but rather whether Netgear chose to continue infringing once aware of the asserted patent. And while Netgear argues that TrackThings "brought [Netgear's patents] into this case" (Opp. at 3) by mentioning them in passing in earlier *briefing*, that is irrelevant to whether Netgear referencing them at trial is relevant to any claim or defense, or rather prejudicial. As in Sonos, Netgear of course may be permitted to reference its patents if TrackThings "opens the door to any such evidence," but speculative future arguments are not grounds to deny this motion now or to allow Netgear to affirmatively introduce prejudicial material. Sonos, 2017 WL 5633204, at \*1.

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<sup>&</sup>lt;sup>1</sup> Netgear's citation to its own patents in Dr. Houh's (Netgear's *technical* expert's) supplemental report of a month ago—served after the filing of TrackThings' Motion *in Limine*—is not relevant to the damages inquiry, untimely, and similarly excludable under *Sonos* in any event.

Respectfully submitted,

Dated: New York, NY June 20, 2025

#### MCCARTER & ENGLISH, LLP

#### /s/ Alexandra M. Joyce

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### **EXHIBIT 14A**

NETGEAR'S MIL 1 (including TrackThings'
Opposition and NETGEAR's Reply)

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

NETGEAR, INC.,

Defendant.

C.A. No. 22-981-JLH (CONSOLIDATED)

**JURY TRIAL DEMANDED** 

DEFENDANT NETGEAR, INC.'S MOTION IN LIMINE NO. 1 TO EXCLUDE EVIDENCE, TESTIMONY, OR ARGUMENT REGARDING SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

#### TABLE OF EXHIBITS

Ex. 1	Excerpted TrackThings' Supplemental Responses to NETGEAR's Interrogatories, dated December 1, 2023
Ex. 2	CNET, "Best Mesh Wi-Fi Systems in 2024: Top Rated Routers for Whole-Home Wi-Fi," https://www.cnet.com/home/internet/best-mesh-wifi-routers/ (Jan. 1, 2024) (bearing Bates label TT-N-0093562)
Ex. 3	Businesswire, "NETGEAR Introduces Powerful New Tri-band Mesh WiFi to the Portfolio of Nighthawk Mesh WiFi 6 Systems," https://www.businesswire.com/news/home/20210316005906/en/NETGEAR-Introduces-Powerful-New-Tri-band-Mesh-WiFi-to-the-Portfolio-of-Nighthawk-Mesh-WiFi-6-Systems (Mar. 16, 2021).
Ex. 4	Comparison between TrackThings' Response to NETGEAR's Interrogatory No. 8 and Expert Report of Dr. Harry Bims
Ex. 5	TQ Delta v. 2Wire, No. 13-1835-RGA, D.I. 1615 (D. Del. July 12, 2022)

TrackThings should be excluded from presenting any evidence, testimony, or argument regarding secondary considerations of non-obviousness during trial. First, there is insufficient evidence not only with respect to secondary considerations, but also, critically, of nexus between any purported secondary considerations and the claimed invention in this case. This deficiency is incurable. Second, without a showing of nexus, TrackThings' assertion of objective indica of non-obviousness is entirely irrelevant to any claims or defenses in this case. At the very least, its probative value is outweighed by the danger of unfair prejudice and misleading the jury. Therefore, NETGEAR moves *in limine* to preclude TrackThings from presenting any evidence or testimony of secondary considerations under Federal Rules of Evidence 402 and 403.

### A. There Is No Evidence in the Record to Support TrackThings' Assertions of Secondary Considerations of Non-Obviousness and Nexus

TrackThings bears the burden of production to present evidence of secondary considerations of nonobviousness, *ZUP v. Nash Mfg.*, 896 F.3d 1365, 1373-74 (Fed. Cir. 2018), and to establish a nexus between any such considerations and the alleged invention, *Prometheus Lab'ys v. Roxane Lab'ys*, 805 F.3d 1092, 1101-02 (Fed. Cir. 2015); *Fox Factory v. SRAM*, 944 F.3d 1366, 1373 (Fed. Cir. 2019). Here, there is simply no evidence in the record that TrackThings can rely on, and this failure is incurable during trial.

TrackThings' proffered evidence of secondary considerations in response to NETGEAR's interrogatory, the only time it attempts to provide such evidence, is deficient. TrackThings offers nothing but conclusory statements (Ex. 1 at 149-50), and a citation to two third-party documents that only generally discuss WiFi Mesh systems and a new Nighthawk system (Exs. 2-3). However, the law requires more of a patentee attempting to show secondary considerations of non-obviousness. *See In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984) ("[U]nexpected results must be established by factual evidence."); *AstraZeneca v. Breath*, 88 F. Supp. 3d 326, 387 (D.N.J.

2015), *aff'd*, 603 F. App'x 999 (Fed. Cir. 2015) ("Evidence of the long-felt need factor must squarely address the need satisfied by the asserted claims[.]") (emphasis added); *Wyers v. Master Lock*, 616 F.3d 1231, 1246 (Fed. Cir. 2010) (requiring objective evidence of copying).

Critically, TrackThings offers only a conclusory statement that "[t]here is a clear nexus between these secondary considerations and the novel elements of the claimed invention." (Ex. 1 at 150.) However, this conclusory statement, and the two cited documents, cannot prove nexus. Instead, "there must be 'a legally and factually sufficient connection' between the evidence and the patented invention." *Fox Factory*, 944 F.3d at 1373 (quoting *Henny Penny v. Frymaster*, 938 F.3d 1324, 1332 (Fed. Cir. 2019)); *Ferring Pharms. v. Fresenius Kabi USA*, 645 F. Supp. 3d 335, 387 (D. Del. 2022) (no nexus when the patentee "ma[de] no effort to tie the asserted secondary considerations to the claimed [invention]"); *see AstraZeneca*, 88 F. Supp. 3d at 392.

Dr. Bims' opinion suffers from the exact same deficiencies because the two paragraphs in his report discussing secondary considerations or nexus merely parrot TrackThings' earlier response to NETGEAR's interrogatory, using the same language (presumably written by TrackThings' attorneys). (Ex. 4.)<sup>1</sup> And Dr. Bims' opinion is similarly unsupported by any evidence in the record. Therefore, TrackThings cannot now attempt to remedy this failure by introducing any new documents or testimony during trial, neither through Dr. Bims, (*see, e.g.*, Ex. 5 at ¶ 3 (precluding an expert from relying on a document to show nexus when he had not addressed the document)), nor any fact witness as that would be impermissible expert testimony, Fed. R. Evid. 701; *cf E.I. du Pont De Nemours & Co. v. Unifrax I*, 921 F.3d 1060, 1075-76 (Fed. Cir. 2019).

#### B. Without a Showing of Nexus, Any Evidence, Testimony, or Argument

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<sup>&</sup>lt;sup>1</sup> The only difference between the interrogatory response and Dr. Bims' report is that he provides Bates numbers to the same cited documents. Additionally, the second document cannot be identified in the production using the provided Bates number and despite NETGEAR's independent search.

#### **Regarding Secondary Considerations Is Irrelevant**

"Irrelevant evidence is not admissible." Fed. R. Evid. 402. Without a showing of nexus, any testimony regarding secondary considerations is irrelevant to any of TrackThings' claims or defenses. *Yita v. MacNeil IP*, 69 F.4th 1356, 1365 (Fed. Cir. 2023), *cert. denied*, 144 S. Ct. 499 (2023) ("To be relevant, such a secondary consideration must have a 'legally and factually sufficient connection' (nexus) to the claimed invention.") (quoting *Fox Factory*, 944 F.3d at 1373) (emphasis added); *In re GPAC*, 57 F.3d 1573, 1580 (Fed. Cir. 1995). As laid out above, TrackThings has not provided sufficient factual evidence to support a showing of nexus, nor can it offer to cure this deficiency during trial. This alone is basis to exclude this evidence.

Even if some evidence of secondary considerations were relevant, the evidence should be excluded because the probative value is outweighed by unfair prejudice and the danger of confusing the jury. Fed. R. Evid. 403. For example, unsupported assertions of alleged long-felt need or commercial success could lead the jury to make a determination based on an improper basis, such as emotions. Especially given the lack of evidence supporting any nexus or a possibility to provide such evidence during trial, there is essentially no probative value to any testimony of secondary considerations. In such case, this Court has routinely granted motions in limine excluding such evidence for danger of prejudice and confusing the jury. See, e.g., (Ex. 5 at ¶ 5); EMC v. Pure Storage, 2016 WL 775742, at \*3 (D. Del. Feb. 25, 2016) (granting defendant's motion in limine precluding from introducing evidence concerning secondary considerations because "even with a limiting instruction, the probative value . . . is substantially outweighed by the risk of unfair prejudice"); E.I. Dupont de Nemours & Co. v. Unifraxi, 2017 WL 11573721, at \*2-3 (D. Del. May 5, 2017); MiiCs & Partners Am. v. Toshiba, 2017 WL 11573565, at \*1 (D. Del. Oct. 12, 2017). Therefore, NETGEAR requests the Court to exclude evidence, testimony, or argument regarding objective indicia of non-obviousness.

Dated: April 1, 2025 Respectfully submitted,

/s/ James L. Higgins

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#### **CERTIFICATION**

Pursuant to Local Rule 7.1.1, the undersigned counsel hereby certifies that a reasonable effort was made to reach agreement regarding the subject of the foregoing motion but that agreement could not be reached.

/s/ James L. Higgins
James L. Higgins (No. 5021)

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	C A N. 22 001 H H
Plaintiff,	C.A. No. 22-981-JLH (CONSOLIDATED)
v.	JURY TRIAL DEMANDED
NETGEAR, INC.,	
Defendant.	
[PROPOSEI	O ORDER
At Wilmington, this day of _	, 2025, having considered Defendan
NETGEAR, Inc.'s ("NETGEAR") Motion in Lin	nine No. 1 to Exclude Evidence, Testimony, or
Argument Regarding Secondary Considerations	of Non-Obviousness and any pleadings and
arguments in connection therewith;	
IT IS HEREBY ORDERED that NET	TGEAR's Motion is GRANTED. Plaintif
TrackThings, LLC is PRECLUDED from offering	ng evidence, testimony, or argument regarding
secondary considerations of non-obviousness.	
	The Honorable Jennifer L. Hall United States District Judge
	The Honorable Jennifer L. Hall United States District Judge

# EXHIBIT 1

# IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

C.A. No.: 22-981-RGA-JLH (CONSOLIDATED)

v.

JURY TRIAL DEMANDED

NETGEAR, INC.,

Defendant.

PLAINTIFF TRACKTHINGS' FIRST SUPPLEMENTAL RESPONSES AND OBJECTIONS TO DEFENDANT NETGEAR, INC.'S INTERROGATORY NOS. 8-9, 11-12, 15, 19, 21, 24-25 AND SECOND SUPPLEMENTAL RESPONSE AND OBJECTIONS TO INTERROGATORY NO. 10

Pursuant to Federal Rules of Civil Procedure 26 and 33, Plaintiff TrackThings LLC, ("Plaintiff" or "TrackThings"), by its undersigned counsel, hereby submits these objections and responses to Defendant NETGEAR, Inc.'s ("Defendant" or "NETGEAR") First Set of Interrogatories (Nos. 1-14), dated August 15, 2023 (the "Interrogatories" and, individually, each an "Interrogatory").

#### **GENERAL OBJECTIONS**

The following General Objections apply to each of the Interrogatories propounded by NETGEAR and, unless otherwise stated, shall have the same force and effect as if set forth in full in response to each of the separately numbered Interrogatories. Although certain of these General Objections may be specifically referred to in response to certain specific Interrogatories, failure to mention those General Objections in response to other Interrogatories shall not be construed as a waiver of those General Objections as to those other Interrogatories. An assertion of the same,

master node from one of said slave nodes" and "said new node assignment also assigns said new master node as one of said slave nodes" as taught by the '893 Patent.

For the other asserted claims (including, e.g., independent claim 8), Defendant primarily refers back to the above-described claims and therefore similarly fail to disclose that the limitations from the other asserted claims are met.

For at least these reasons and as will be explained further during expert discovery,

Defendant has failed to show that Mizuta discloses at least the above-listed claim limitations.

#### **INTERROGATORY NO. 8**

Identify and describe in detail, including by narrative, all supporting facts and evidence upon which You intend to rely to establish non-obviousness of the alleged invention(s) of the Patents-in-Suit, including without limitation an identification of any secondary considerations that You contend support the non-obviousness of the alleged invention(s) and an identification of all related Documents.

### **RESPONSE NO. 8:**

TrackThings incorporates its General Objections as if fully set forth herein. TrackThings further objects to this Interrogatory to the extent that it is overly broad, unduly burdensome, and not proportional to the needs of this case, at least to the extent it asks TrackThings to "describe in detail, including by narrative, all supporting facts and evidence." TrackThings objects to this Interrogatory as premature and/or improperly requesting expert discovery.

TrackThings objects to this Interrogatory to the extent it seeks information protected from discovery by the attorney-client privilege, the attorney work product doctrine, or any other applicable privilege or doctrine, immunity, statute, regulation, rule or restriction, and TrackThings will not provide such privileged and/or protected information. The inadvertent production by TrackThings of information protected from disclosure by any such privilege, doctrine, or immunity shall not be deemed a waiver by TrackThings of any such privileges or protections.

Subject to the foregoing objections, TrackThings responds to this Interrogatory as follows: The Patents-in-Suit cover three fundamental pillars necessary for commercially successful mesh systems: intelligent node placement, differentiated radios, and dynamic network reconfiguration. Each of these pillars is a novel element of the inventions claimed in the Patents-in-Suit and marketed by NETGEAR. The validity of the asserted claims is supported by several secondary indicia of non-obviousness. For example, each of the asserted claims from each of the Patents-in-Suit are valid including as evidenced by the commercial success enjoyed by devices practicing the patented inventions, industry praise for the patented inventions, professional approval, copying by others, and the existence of a long-felt but unsatisfied need for the inventions. There is a clear nexus between these secondary considerations and the novel elements of the claimed invention.

For example, regarding the '017 Patent, as of the filing date of the asserted claims, there was a long-felt, but unmet need for a mesh wireless system that had the claimed features of the asserted claims. The placement of the nodes in a mesh network is important because "Optimal placement of Wi-Fi mesh nodes will ensure you get the most out of your new system" (see, e.g., https://www.howtogeek.com/880578/how-to-place-mesh-router-nodes-for-optimal-coverage/) and "[i]f your mesh node placement is poor, you'll never realize the full benefits of a mesh system" https://www.howtogeek.com/802562/mesh-router-placement-mistakes-to-avoid/). (see, e.g., NETGEAR repeatedly has recognized this importance. See, e.g., https://kb.netgear.com/31029/Where-should-I-place-my-Orbi-satellite ("Adding an Orbi Satellite can improve your system range and performance" and "[t]he distance you should place your Orbi satellite from your Orbi router varies depending on your environment."). Others in the industry have repeatedly recognized this importance well, including Google as (see https://support.google.com/googlenest/answer/7182746 ("[a]dditional points can be added to get better coverage in hard-to-cover areas like hallways and near walls for outdoor coverage")) and Amazon (see https://www.businesswire.com/news/home/20160223005977/en/eero-Introducesthe-World%E2%80%99s-First-Home-WiFi-System ("Every home has a unique blueprint, but proper placement allows you to get signal to any corner of your home, no matter the size or shape")), evidencing professional approval and copying by others. These features have also for garnered industry praise NETGEAR. (See. e.g., https://www.increasebroadbandspeed.co.uk/review-netgear-orbi-wifi6 ("A key strength of the Orbi system is the provision of step-by-step instructions via the mobile app throughout the set-up process. For example, to help position the satellites, the app instructed, 'Place your satellites at table height, away from fish tanks, metal shelves, microwave ovens and other wireless devices."")). The '017 Patent solves this problem by using a distributed "computation unit" that "determines the best placement of a new relay to improve the link integrity of the network." The commercial success of mesh systems that practice the '017 Patent, including the Accused Products in this litigation further confirm the validity of the '017 Patent.

The '442 Patent's invention also satisfies a long-felt need. A fundamental challenge in developing wireless networks for homes and offices is the question of how to expand the coverage area of the wireless network without sacrificing bandwidth. While predecessor devices called range extenders succeeded in extending the coverage area of wireless networks, the loss of bandwidth that resulted from the fact that these devices communicated with the router and client devices over the same band plagued them. Notably, range extenders could cut a Wi-Fi network's data capacity by half (or worse) when routing data between client devices and the internet.

The novel elements of the '442 Patent overcame these challenges by using multiple, differentiated radios in each relay. Each relay contains multiple software radios, *e.g.*, operating on

different bands. One of the radios connects back to the edge router and the internet (as well as to some client devices), and the other radio connects only to client devices. Each relay can then be equipped with a "control block" that can shuttle data between the two radios within the satellite. Professional approval and copying by others of these patented features is evidenced by the fact that dozens of competing Mesh WiFi systems use multiple, differentiated radios. (See, e.g., https://www.cnet.com/home/internet/best-mesh-wifi-routers/). And industry praise is often experienced with the implementation differentiated of radios. (See. e.g., businesswire.com/news/home/20210316005906/en/NETGEAR-Introduces-Powerful-New-Triband-Mesh-WiFi-to-the-Portfolio-of-Nighthawk-Mesh-WiFi-6-Systems) ("[w]ith the popular dual-band Nighthawk Mesh (MK63) designed to provide WiFi coverage for up to a 4,500 squarefoot home at a more affordable entry-level price, Nighthawk customers have been asking for a triband version that delivers even greater coverage for a larger home.") The commercial success of mesh systems that practice the '442 Patent, including the Accused Products in this litigation further confirm the validity of the '442 Patent. There is a clear nexus between these secondary considerations and the novel elements of the claimed invention.

The '893 Patent's invention also satisfies a long-felt need. As an example, part of the power of mesh systems is the novel capacity for each relay to communicate with any other relay as necessary to optimize network performance. This allows mesh systems to form distinct topologies that can adapt to the particular shape of the home being covered. For example, the mesh satellites can be configured in a "star" topology where each satellite connects back to the edge router, or in a longer "daisy-chain" topology where a satellite is connected to another satellite with is then connected back to the edge router. The '893 Patent teaches and claims how to dynamically reconfigure these types of networks between these different topologies to improve performance of

the system. Netgear has touted and experienced industry praise for this feature (*See*, *e.g.*, <a href="https://kb.netgear.com/000048458/What-is-daisy-chain-and-how-does-it-work-with-my-Orbi-WiFi-System-or-Nighthawk-Mesh-System;">https://justjooz.com/orbi-satellites-placements/</a>). The commercial success and industry praise of mesh systems that practice the '893 Patent, including the Accused Products in this litigation further confirm the validity of the '893 Patent.

These aspects of the Patents-in-Suit, among others, were long-desired, had not been provided prior to the inventions of the Patents-in-Suit, and provide important benefits to users, including expanding the coverage area of a network, improving the ease of setup, improving system performance (*i.e.*, stability, reliability, and speed), and reducing interference, lags and buffering (e.g. by utilizing differentiated radios). The three TrackThings technologies are necessary for commercially successful mesh systems. As shown by NETGEAR's own materials as well as industry sources, directing users toward placement of relays is a crucial feature to enable the systems to function at their full capacity. Having differentiated radios and a dedicated backhaul is similarly important in order for mesh systems to outperform the prior art. The ability to dynamically reconfigure topology and selfheal is at the heart of the mesh approach.

Discovery is ongoing and TrackThings reserves the right to amend or supplement its response to this Interrogatory in accordance with the Federal Rules of Civil Procedure and any applicable order of the Court. TrackThings also reserves the right to rely on the testimony of witnesses that are deposed and provide information relevant to this Interrogatory.

#### SUPPLEMENTAL RESPONSE NO. 8

TrackThings incorporates fully its Responses and Specific Objections to Interrogatory No. 8 as set forth above, in TrackThings' Objections and Responses to NETGEAR's First Set of Interrogatories, dated September 14, 2023. Subject to, and without waiving the foregoing

objections, TrackThings further responds to this Interrogatory as follows: TrackThings further notes the following benefits of the patents-in-suit, which satisfied long-felt needs.

The '442 patent's claimed configuration of radios and transceivers results in improved performance (e.g., speed, stability, reliability, coverage, efficiency). The '017 patent's use of a distributed computational unit improves overall network integrity, allows for a better setup of the network, including ease of use and setup, helps ensure the network is fast and resilient and assists in expanding network coverage area, including in filling in deadspots. The '893 patent allows mesh Wi-Fi systems to form distinct and dynamic topologies that are able to automatically adapt to the particular shape of the Wi-Fi coverage area in order to optimize network performance resulting in improved performance, self-healing, network stability, and reduced lags and buffering.

TrackThings further incorporates by reference the November 28, 2023 deposition transcript of Mr. Harpalani along with the exhibits used therein. TrackThings reserves the right to rely on the testimony of additional witnesses that are deposed and provide information relevant to this Interrogatory.

## **INTERROGATORY NO. 9**

Describe in detail the complete legal and factual bases for Your contention, if any, that the Asserted Claims are not invalid under 35 U.S.C. § 112 for insufficient written description, lack of enablement, and/or indefiniteness, including stating the legal and factual bases for any disagreement with the written description, lack of enablement, and/or indefiniteness arguments in NETGEAR's Invalidity Contentions, and an identification of all related Documents.

## RESPONSE NO. 9

TrackThings incorporates its General Objections as if fully set forth herein. TrackThings further objects to this Interrogatory to the extent that it is overly broad, unduly burdensome, and not proportional to the needs of this case, as well as compound, at least to the extent it asks TrackThings to "[d]escribe in detail the complete legal and factual bases for Your contention, if

Dated: December 1, 2023

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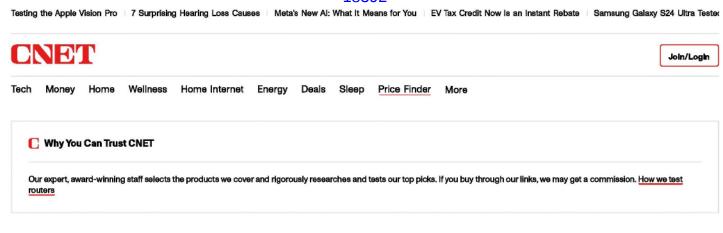
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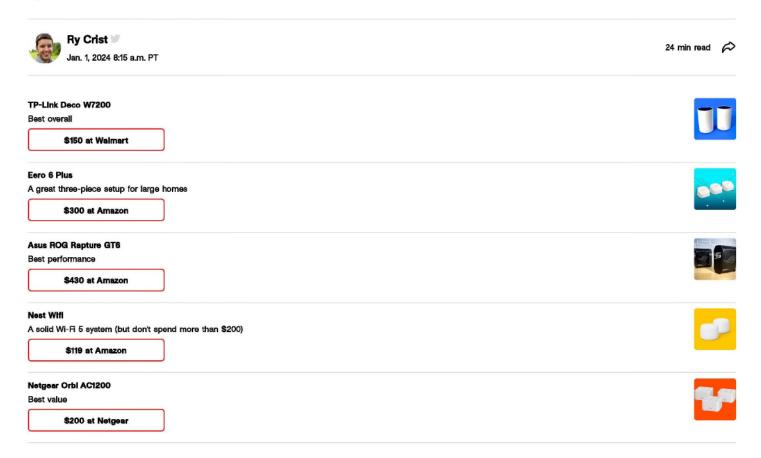
# EXHIBIT 2



# Home > Home Internet

# Best Mesh Wi-Fi Systems in 2024: Top Rated Routers for Whole-Home Wi-Fi

The best mesh routers carry a strong internet connection to every corner of your home. We've tested the top models to help you pick the right one.

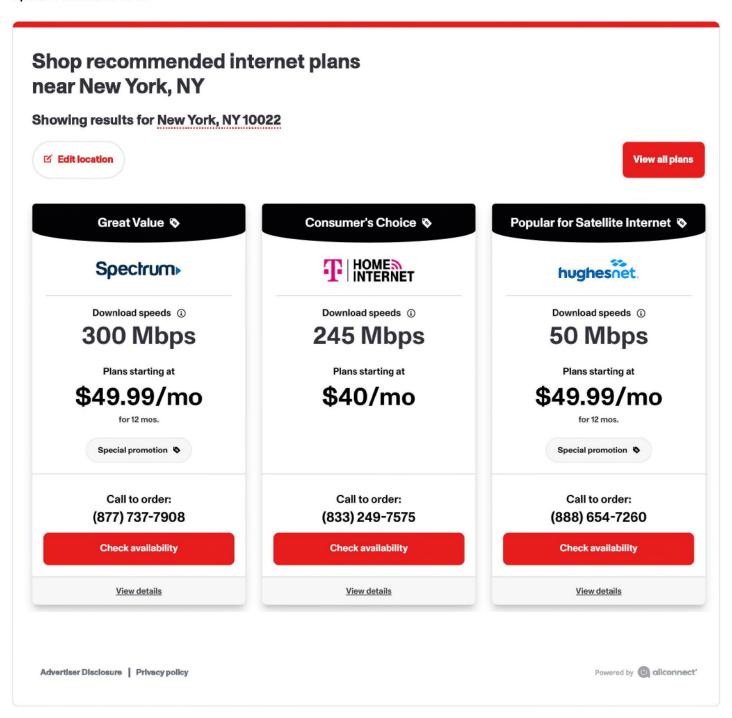


# What is the best mesh Wi-Fi system overall?

The farther away you get from your router, the weaker your internet connection tends to be, but the best mesh routers can fix this. For most homes, our top pick is the <u>TP-Link Deco W7200</u>, a two-piece mesh system that offers excellent performance for around \$200. Many other top-tier mesh routers are worth considering, and we've spent years testing them out to find the best systems of the bunch. Check out our roundup of the latest <u>Black</u> Friday deals for the best prices on the mesh routers listed below.

We've still got lots of routers and mesh systems we'd like to try out, the majority of which use Wi-Fi 6 technology, promising better performance and faster speeds. Shop around and you'll find mesh routers from Eero, Nest, Netgear Orbi, Linksys and others that support Wi-Fi 6E, which means they can also access a newly unlocked mass of fresh bandwidth in the 6GHz band. In 2024, we're expecting to see lots of new systems that support Wi-Fi 7, which promises to make even better use of that 6GHz band for smoother, faster connections. A few of those systems, including the Netgear Orbi 970 series and the Eero Max 7 are already available for purchase (more on those a little further down the post).

Expect regular updates to this post as new Wi-Fi mesh routers like those make it to market. For now, here are our picks for the top-tested systems you should be considering first if you're shopping for the best mesh Wi-Fi system options available now.



# Best mesh routers



Ry Crist/CNET

#### TP-Link Deco W7200

Best overall



Wi-Fi Standard	Wi-Fi 6
Speed Rating	AX3600
Range	Up to 5,500 sq. ft. (two devices)
Wireless Networking Security	WPA2, WPA3
Bands	Tri-Band (2.4 and two 5GHz)

For a mesh router upgrade that really feels like an upgrade, you'll want to look for these things: Wi-Fi 6 support and a tri-band design with the usual 2.4 and 5GHz bands. You'll also want a second 5GHz band that the system can use as a dedicated backhaul connection for wireless transmissions between the main router and the satellites. The problem is that tri-band Wi-Fi 6 mesh routers like that are typically expensive. Not too long ago, I was commending Asus and Eero for bringing the cost of a two-piece system like that down to around \$400.

Read more

\$150 at Walmart

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Ry Crist/CNET	
Asus ROG Rapture GT6	
_	
Best performance	
Looking for the fastest mesh route	er on the list? Look no further; it's the Asus ROG Rapture GT6, a Wi-Fi 6
	out \$450 for a two-pack. In our controlled speed tests on a gigabit network,
	verage download speed across all distances of 809Mbps, along with an
	I speed of 785Mbps. Nothing else we've tested has delivered speeds as fast
as that, not even fancy Wi-Fi 6E sy	stems that cost even more.
Read more	
\$430 at Amazon	

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	came a breakout hit thanks to its easy setup and its ability to spread a fast,
	out your home for all of your connected devices. Then, there was Nest Wifi, a
	n faster internet speeds and a better-looking design, plus Google Assistant rellite extender. It was an immediate standout in our tests, and our top-
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Netgear Orbi AC1200  Best value  Wi-Fi Standard  Speed Rating  Range  Wireless Networking Security  Bands  The AC1200 version of Netgear Or	AC1200  Up to 4,500 sq. ft. (with two satellites)  WPA2  Dual-Band (2.4 and 5GHz)  rbi is a smaller, simpler version of the popular mesh system. It doesn't offer
Netgear Orbi AC1200  Best value  Wi-Fi Standard  Speed Rating  Range  Wireless Networking Security  Bands  The AC1200 version of Netgear Orblazing-fast speeds, but the performance of t	AC1200  Up to 4,500 sq. ft. (with two satellites)  WPA2  Dual-Band (2.4 and 5GHz)  rbi is a smaller, simpler version of the popular mesh system. It doesn't offer
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Netgear Orbi AC1200  Best value  Wi-Fi Standard  Speed Rating  Range  Wireless Networking Security  Bands  The AC1200 version of Netgear Orblazing-fast speeds, but the perforbuilds.	AC1200  Up to 4,500 sq. ft. (with two satellites)  WPA2  Dual-Band (2.4 and 5GHz)  rbi is a smaller, simpler version of the popular mesh system. It doesn't offermance is consistent, and it costs a whole lot less than other, fancier Orbi

CNET editors pick the products and services we write about based on editorial merit. When you buy through our links, we may get a commission. Read more about how we test mesh routers.

# When do you need a mesh Wi-Fi system?

Why does mesh Wi-Fi matter? Between working from home, gaming online, video chatting and streaming shows and movies, there are plenty of reasons to want a fast, reliable Wi-Fi signal throughout the entirety of your home.

With multiple devices spread throughout your home, a mesh router is like a team of routers that can relay your wireless traffic back to the modem better than a traditional router. They're particularly good fits for large or multistory homes where your Wi-Fi network has a lot of ground that it needs to cover -- and walls to travel through -- but they can also help boost speeds at range in small- or medium-size homes. And in 2024, there are lots of new, next-gen options on the market, so it's a good time to make the switch.



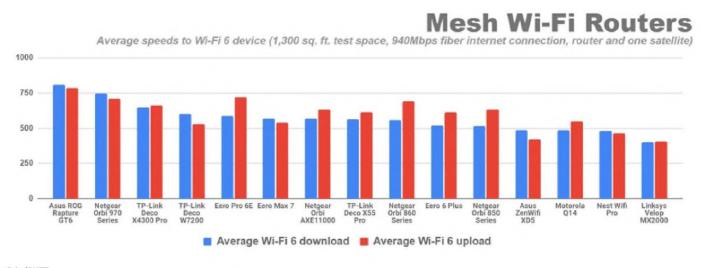
Some of the most consistent mesh router performance we've seen in our tests comes from systems from Eero, which popularized mesh networking before being bought by Amazon in 2019, as well as the latest setups from the TP-Link Deco, Asus ZenWiFi, Netgear Orbi and Google Nest product lines. Mesh systems regularly sold for as much as \$500 a few years ago, but now these manufacturers offer multipoint mesh router systems -- including the main router and the additional satellite extenders -- for closer to \$200. Though we'd recommend aiming a bit higher, you can even find basic, entry-level mesh systems for as little as \$40 per device that can provide a strong Wi-Fi signal throughout your entire home.

# Here's how we speed test mesh routers

Router manufacturers make big claims about top speeds, <u>many of which can be misleading</u> or at least confusing when you're shopping for a new one. That's why we put every router we review through our own, independent speed tests in a real-world test environment. For much of the past few years of working from home, that test environment has been my house, but in 2024 CNET's been working to relocate those tests to our test lab, where we can do more to control for variables in the environment.

Specifically, we've set up a five-room, 1,300-square-foot test space for home networking tests, with incoming gigabit internet speeds (940Mbps downloads, 880Mbps uploads). It's not as big as the multibedroom, multistory homes where mesh routers really shine, but it's still enough space to see a separation between the top mesh systems on the market.

To get there, we set each mesh system up in the same locations within the environment, and then we started running Wi-Fi speed tests across each of the five rooms. That includes tests during morning, afternoon and evening hours, and tests to a variety of client devices, including both Wi-Fi 6 and Wi-Fi 6E devices. For half of my tests, I start by connecting in the same room as the router and then work away from it -- for the other half, I start by connecting at the farthest point from the router and then work towards it. In the end, I average it all together to get a good, comprehensive look at how each system performs.



Ry Crist/CNET

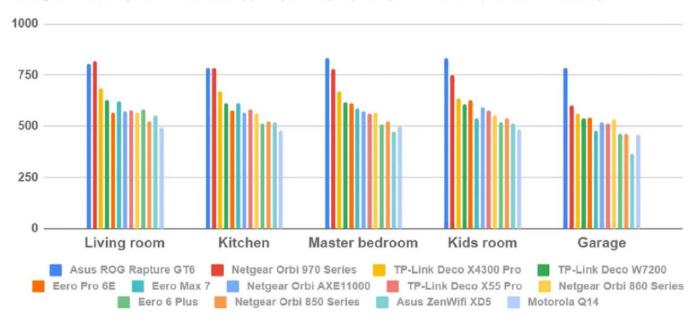
You can see those results for yourself in the bar graph above, which shows the overall average Wi-Fi 6 upload and download speeds for each system we've tested. We're still working to re-test the top-rated systems from previous years alongside new systems as they come out, so you can expect regular updates to this post whenever I've got new data to share.

For now, the system that kept my Wi-Fi 6 downloads the highest was our top performance pick, the Asus ROG Rapture GT6. Right behind it is the Netgear Orbi 970 Series -- it's the most expensive mesh router I've tested to date, and one of the first I've tested that supports Wi-Fi 7, but for these tests, remember that I'm using a Wi-Fi 6 device. In third place is the TP-Link Deco X4300 Pro, followed closely by our top recommended system for most homes, the affordable TP-Link Deco W7200. At this point, it's been a performance standout across multiple rounds of exhaustive speed tests in multiple locations against dozens of competitors. It's always been right at the top of the pack in terms of speeds and reliability, so it remains my top overall recommendation among Wi-Fi 6 mesh systems, especially considering that it isn't too expensive at \$209 for a two-pack.

Top picks aside, some interesting new competition has entered the scene in the last year or two. Most notable are two of the newest mesh systems from Amazon, the Eero 6 Plus and the Eero Pro 6E. Like the Deco W7200, each of those systems has held up well across multiple rounds of speed tests, with demonstrably stronger speeds than previous-gen Eero devices. In fact, the Eero Pro 6E actually notched faster average speeds to my Wi-Fi laptop than the brand new Eero Max 7 did, though that was largely due to the fact that it offered steadier, more consistent performance. The 6 Plus and Pro 6E offer a similar level of performance to Wi-Fi 6 devices, so the less expensive Eero 6 Plus is probably the better pick for most homes at \$300 for a three-pack (or less, if you can catch one of Amazon's frequent sales).

# **Mesh Wi-Fi Routers**

Average DOWNLOAD speeds to Wi-Fi 6 device (1,300 sq. ft. test space, 940Mbps fiber connection, router and one satellite)



Ry Crist/CNET

That said, if you're starting to use devices at home that support Wi-Fi 6E, then the Eero Pro 6E might be worth the extra expense, as it adds in access to the 6GHz band to deliver faster speeds to devices like those. I re-ran my speed tests on a Wi-Fi 6E test device capable of connecting over 6GHz and the only Wi-Fi 6E system that returned faster speeds than the Eero Pro 6E was the AXE11000 version of the Netgear Orbi, which costs a whopping \$1,499 for a three-pack. From a performance standpoint, it's our top-tested Wi-Fi 6E system -- but the Eero Pro 6E is right behind it and costs less than half as much at \$550 for a three-pack or less. Just note that the system that finished in first place in these 6E tests was, again, the Asus ROG Rapture GT6, which isn't a Wi-Fi 6E router at all, but rather, a super speedy Wi-Fi 6 router.

On the Wi-Fi 6E front, I was less impressed with the speeds I saw from the Motorola Q14 and from the Nest Wifi Pro, both to my Wi-Fi 6 and Wi-Fi 6E test devices. Both were workable systems that did the job in my tests -- but with 6GHz speeds that fell short of Eero and Netgear, neither system offers a noticeable speed upgrade over the competition, and that makes them harder to recommend. Still, give Nest Wifi Pro some credit for stable speeds, strong smart home chops and good value at \$395 for a three-pack.



The Vilo mesh router is the slowest I've ever tested, but it's functional, and it only costs \$20 per device, plus shipping. Ry Crist/CNET

If you're living with a slow ISP connection and you don't need Wi-Fi 6, Wi-Fi 6E, or a fancy tri-band build, then there's nothing wrong with skipping those upgrades and going with something simpler in order to save some money. I've tested a number of bargain picks like that in recent years -- among them, the AC1200 version of the Netgear Orbi, currently available in a three-pack for under \$120, is my top recommendation, with the right balance of performance and value.

If you want to get dirt cheap, you could opt for something like the <u>Vilo</u> system, which costs around \$40 per device, plus shipping. It's the slowest mesh router I've ever tested, which wasn't surprising, but it was still functional and able to maintain workable average download speeds at range.

# Other mesh routers we've tested

We test lots of routers at CNET HQ -- mesh and otherwise -- so we're constantly updating our rundowns of the top systems on the market. I'll note any new mesh systems we test here as we go, along with a quick summary of my takeaways. Please note that this list includes several systems that were tested at my home during the pandemic, and not in our latest test setup.

Amplifi Alien: An early Wi-Fi 6 mesh system, the Amplifi Alien sports an attractive, gamer-friendly design, complete with touchscreen controls on the main router. At \$380 for a single device, it's a bit overpriced, but the unique build and the focus on advanced features should keep it on the radar for some.

Arris Surfboard Max AX6600: Another high-powered Wi-Fi 6 system with an upright, cylindrical design, the Surfboard Max Pro was able to deliver fast speeds to other Wi-Fi 6 devices in my tests, but the performance was inconsistent with earlier-gen Wi-Fi 5 devices. I also didn't like the Ethernet jacks on the bottom of the device, which force you to bend your cables to the extreme in order to plug the router in.

Asus ZenWifi XD5: The ZenWifi XD6 is close to the Eero 6 Plus in both specs and price, and at \$300 for a three-pack, it's one of the more affordable Wi-Fi 6 devices you'll find. Its performance was less consistent across the home. In the garage, I only got 284Mbps upload speeds with the XD5 compared to 494Mbps in the living room, while the Eero 6 Plus returned 706 and 486Mbps for the same price.

Asus ZenWifi XD6: The middle child from the Asus family of Wi-Fi 6 mesh routers, the ZenWifi XD6 is a dual-band mesh system. It won't give you the tri-band build of the ZenWifi XT8, nor will you get that system's multi-gig Ethernet jack. Still, the system performed as well as any dual-band mesh router I had ever tested when I first reviewed it, so it isn't a bad pick by any stretch. At less than \$400, it's a decent price for a high-performance system.

Asus ZenWifi XT8: One of the most powerful ZenWifi systems, the tri-band XT8 performed well in our speed tests, and was among the first mesh routers to include multi-gig Ethernet WAN ports on each device. Available in a two-pack for about \$350, the former CNET Innovation Award winner is a reasonable midrange pick in 2024, but it isn't quite as good a value as the TP-Link Deco W7200 or the Eero 6 Plus.

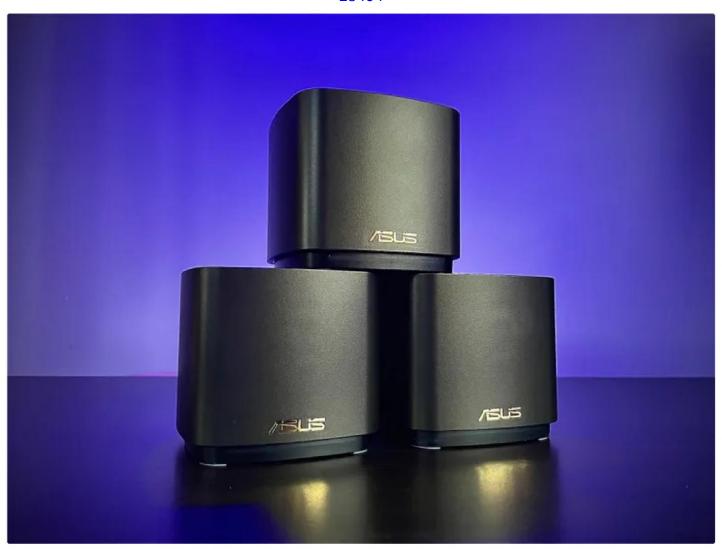
Asus ZenWifi AX Mini: Also known as the ZenWifi XD4, the ZenWifi AX Mini is a pint-sized smaller sibling to the larger and more powerful ZenWifi XD6 and XT8 systems recommended above. Performance was scattered in my tests, with annoying speed drop-offs whenever I'd connect at a distance, so it isn't as recommendable as other ZenWifi offerings.

**Eero 6**: Amazon's first Wi-Fi 6 mesh router, the Eero 6 hit the market back in 2020, but it didn't blow us away during our tests. Eero systems that followed it did a lot better in my speed tests, and they offer the same smart home perks, like built-in radios for Zigbee and Thread.

**Eero Pro 6**: While the standard Eero 6 system was a bit underwhelming in 2020, the beefier, more powerful Eero 6 Pro left us impressed, particularly for fast average uploads and low latency. The Eero Pro 6E system that followed it is the better upgrade pick for most thanks to the addition of the 6GHz band, but if you're skipping Wi-Fi 6E and just want a solid, tri-band Wi-Fi 6 system, this one still fits the bill.

**Eero Pro 6E**: The Eero Pro 6E did an excellent job in our speed tests, finishing toward the top in just about every category while also delivering a noticeable speed bump to Wi-Fi 6E devices that can connect over the 6GHz band. The smaller-sized Eero 6 Plus is the better value for most households, but if you're a Wi-Fi 6E power user with gigabit speeds at home, then upgrading to the Eero Pro 6E merits strong consideration.

Eero Max 7: It's Amazon's newest, largest and priciest Eero mesh system, and it adds in support for Wi-Fi 7, the new Wi-Fi standard that promises to build upon Wi-Fi 6E's foray into the 6GHz band. In our initial speed tests, the Max 7 was capable of hitting blazing fast speeds, but it didn't sustain those highs throughout testing -- in fact, on multiple occasions when I'd connect from the test floor's garage, the farthest room from the main router, the system would connect me through the extender on the 2.4GHz band, which caused speeds (and the Max 7's overall position on my leaderboard) to plummet. Worse, the system kept me on 2.4GHz even after I'd returned to



The Asus ZenWifi AX Mini costs less than other ZenWifi systems that support Wi-Fi 6, but performance was scattered in our speed tests.

Ry Crist/CNET

the same room as the router. What's more, when we re-ran our tests with a fancy Wi-Fi 7 test device, speeds were actually *slower* than what we saw on a Wi-Fi 6 or Wi-Fi 6E device. I'll continue testing this system to see if the mesh improves, but for now, it's not a splurge that I'd recommend.

<u>Linksys Velop MX2000</u>: Available in a two-pack <u>for \$150</u>, the Linksys Velop MX2000, also known as the Velop Atlas 6, is decent enough as baseline Wi-Fi 6 mesh routers go, but you'll find better value and faster speeds if you shop around.

Nest Wifi Pro: The Nest Wifi Pro mesh router reworks the original Nest Wifi pitch by ditching the built-in Google Assistant smart speakers and adding in access to the 6GHz band via Wi-Fi 6E support. With a built-in Thread radio and robust smart home controls via the Google Home app, it's a decent pick for smart home enthusiasts, and it was as stable a performer as I've seen in my speed tests. Still, those speeds were a bit lackluster, and the system also lacks backwards compatibility with previous Nest Wifi and Google Wifi hardware. At \$320 for a three-pack, it's a bit expensive for such middle-of-the-road performance.

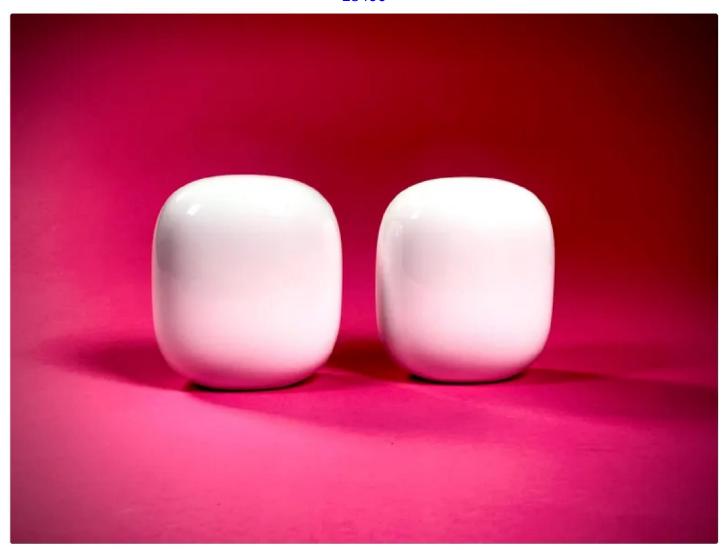
<u>Netgear Orbi AX6000</u>: Originally released as the Netgear Orbi 850 series, and recently updated to the 860 Series, both generations of Netgear's flagship AX6000 mesh router offer strong performance, but I wasn't as impressed with the system's speeds on a gigabit network, where several systems that cost less have managed to outperform



The Eero Pro 6E is a great pick for gigabit networks, but most homes would be just fine sticking with the less expensive Eero 6 Plus. Ry Crist/CNET

it in my tests. Even so, this is one of the most consistent mesh routers I've tested, with reliable speeds from test to test. If that type of steady performance is what you're after, then it belongs high on your list.

Netgear Orbi AXE11000: The AXE11000 version of the popular Netgear Orbi router is a high-powered Wi-Fi 6E tank that leads all other routers I've tested in terms of its speeds to Wi-Fi 6E devices. It's a strong performer over plain ol' Wi-Fi 6 too, but not nearly as dominant as you might expect given that it costs \$1,500 for a three-pack.



The Nest Wifi Pro is one of the newest Wi-Fi 6E routers on the market. There's a lot to like about it, but the average speeds were underwhelming among Wi-Fi 6E systems.

Ry Crist/CNET



Ry Crist/CNET

Netgear Orbi 970 Series: Netgear's newest flagship, the 970 Series is a tower-shaped Orbi system that adds in support for Wi-Fi 7, the new Wi-Fi standard that promises to build upon Wi-Fi 6E's expansion into the 6GHz band. The system was just as speedy as expected when I tested it out -- but not *quite* as fast with Wi-Fi 6 devices as the top-performing Asus ROG Rapture GT6. As for Wi-Fi 7 devices, we didn't see notably better performance than Wi-Fi 6 in our initial tests, but it's still very early for the standard. We'll know a lot more once we've had a chance to test additional Wi-Fi 7 setups out, so stay tuned for updates on that front in the coming year. In the meantime, this extremely expensive system is almost certainly overkill for most households.

TP-Link Deco X4300 Pro: The Deco X4300 Pro is an impressive system that features some of the best Wi-Fi 6 speeds we've seen, plus multi-gig Ethernet jacks on each device. The Deco W7200 still seems like the better value for most homes, but if you're looking for a step up from that system, put the X4300 Pro on your radar.

<u>TP-Link Deco X55 Pro</u>: The X55 Pro shares a lot of similarities with the Eero 6 Plus -- support for Wi-Fi 6, far-reaching range, gigabit Ethernet jacks -- but I lean towards Eero's mesh system for its features like built-in Zigbee radio. The Eero 6 Plus also returned slightly faster speeds in testing. At \$250, the X55 Pro is a decent value for a three-piece mesh system, but I'd put it more in "good not great" territory.

<u>TP-Link XE75</u>: TP-Link's first Wi-Fi 6E mesh router, the XE75 did a decent job in our initial tests in 2022, though the system's average upload speeds were lower than I'd expected. It's a clear value pick and currently available in a two-pack for well under \$250, so give it a look if you're curious about Wi-Fi 6E but fearful about breaking the

bank. I'll update this page once we've retested it in our lab, so stay tuned for that.

TP-Link Deco X90: With a multi-gig WAN port and a faster speed rating, the Deco X90 is a midrange upgrade pick over the Deco W7200, and it costs \$280 for a two-pack. It performed well in my tests, but not enough that I'd recommend paying \$100 more than the Deco W7200 for it.

Vilo: The Vilo mesh router was one of the most affordable mesh routers I had ever tested back in 2021, when devices were available for about \$20 each. These days, you can snag it for a little less than \$40 per mesh device, but you shouldn't expect high speeds from a low cost Wi-Fi 5 system like this one -- in fact, it rang in with the slowest average uploads and downloads among any system I tested it against. Still, it got the job done, so if you just need something dirt cheap, speeds be damned, give it a look.



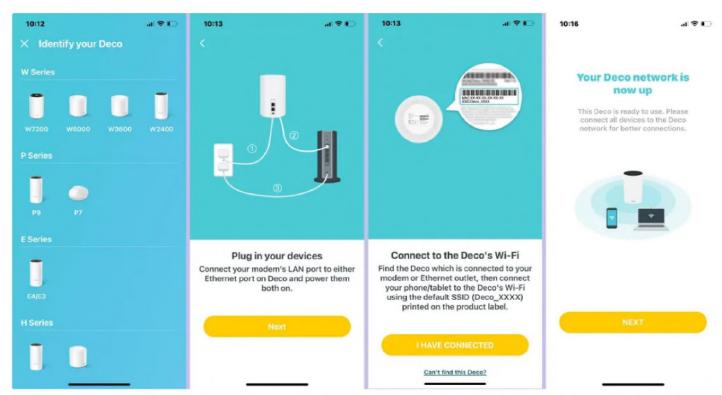
It isn't a top performer or a value pick, but the Amplifi Alien is a great-looking Wi-Fi 6 mesh router that lets you create a VPN-style connection to your home network when you're traveling, which is a nice, unique feature.

Chris Monroe/CNET

# How to choose a mesh Wi-Fi router

Performance and value are probably the first things you'll look for as you shop for a mesh router, but there are other factors worth taking into consideration as well. Take features, for instance. Mesh routers typically don't come with many unique bells and whistles, but there are some standouts. The Amplifi Alien mesh router from Ubiquiti is a good example -- apart from a unique-looking build, it features touchscreen controls on the front of each device, along with a feature called Teleport that lets you establish a VPN-style connection to your home network when you're traveling. That's a useful trick that lets you make use of your home network's security capabilities when you're connecting to a public Wi-Fi network.

Speaking of security, if you're buying a new router, then it's worth looking for one that supports the latest encryption standards. Most of the new models released in the last year or two support <u>WPA3</u> for a stronger defense against things like brute-force hacking attempts; I'd want a model like that if it were me making the



Most mesh routers are a cinch to set up, with companion apps that walk you through the process in a matter of minutes. Just plug everything in and follow the instructions.

Screenshots by Ry Crist/CNET

As for setup, don't worry too much about it, if at all. Just about every new router, mesh or otherwise, will come with a convenient companion app that'll walk you through the setup process in a matter of minutes. From there, you'll have simplified network controls just a few taps away, allowing you to turn a guest network on and off, manage parental controls or change your network password. Just keep in mind that router apps like these will often glean lots of data from your networking habits for marketing and ad-targeting purposes -- if you're privacy-minded, it might be worth checking the app's privacy policy to see if you can opt out of data collection altogether.

There are a number of other factors that we take into consideration whenever we test a mesh router. Latency is a good example. I run each of my speed tests on the same server, which gives me a good, comparative look at how quickly each one is able to send and receive data. Most of the mesh routers I'm testing these days do just fine, with average latency usually coming in between 15ms and 20ms per ping, but some systems will see latency spikes when they're routing your connection through a satellite extender. That means connecting to a mesh system at range might not be the best bet for gamers, or for anyone else particularly concerned with latency.

Something else to think about as you shop is data security and privacy. WPA3 is the newest encryption standard for web traffic, and most of the newest mesh routers on the market offer it. If you're buying a new router of any kind at this point, that's a standard worth prioritizing.

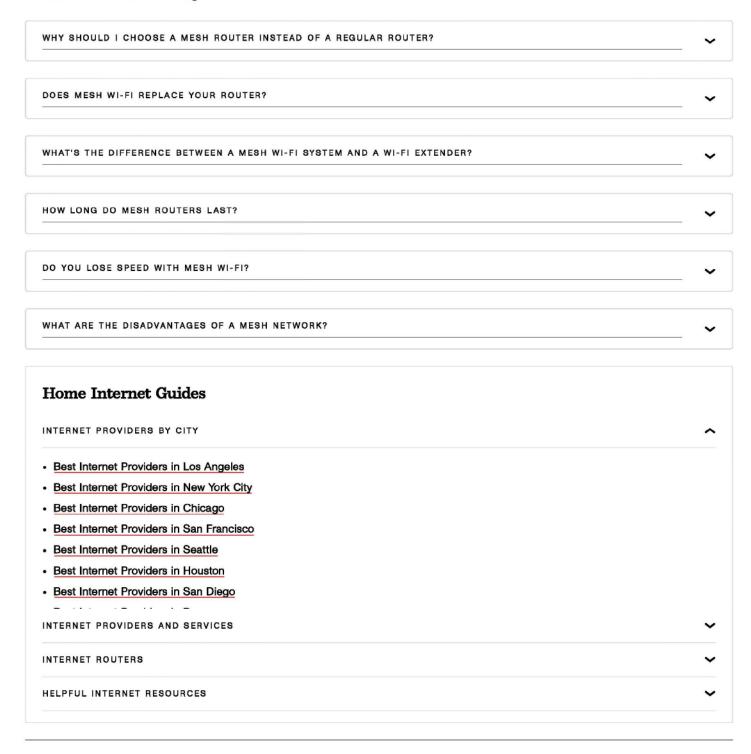
# The bottom line on mesh routers

If your Wi-Fi is struggling to reach every room in your house, a mesh Wi-Fi system is the best solution for extending the connection. The best model for most homes is the <u>TP-Link Deco W7200</u>, a two-piece system that performed extremely well in our tests for around \$200. The Eero 6 Plus is a three-piece system that has

consistently returned solid speeds in our tests and retains for about \$200. It's not quite as fast as the TP-Link, but with an extra mesh device, it's a better fit for larger homes.

If you want something powerful that can make the most of a gigabit internet connection, then I'd point you toward the <u>Asus ROG Rapture GT6</u>, which remains the fastest mesh system we've tested here in recent months. At \$450 for a two-piece setup, it isn't cheap, but it outperformed fancy Wi-Fi 6E and Wi-Fi 7 systems that cost hundreds more.

# Mesh router FAQs



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# EXHIBIT 3

Mar 16, 2021 1:00 PM Eastern Daylight Time

# NETGEAR Introduces Powerful New Tri-band Mesh WiFi to the Portfolio of Nighthawk Mesh WiFi 6 Systems

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Experience better WiFi coverage, speed and new connection capabilities for maximum performance of home WiFi



Providing powerful mesh WiFi 6, the NETGEAR Nighthawk Tri-band Mesh WiFi 6 System (MK83) is designed to blanket the whole home with high-performance WiFi to manage more devices on the network and eliminate dead zones in every room of the house. (Photo: Business Wire)



SAN JOSE, Calif.--(BUSINESS WIRE)--NETGEAR®, Inc. (NASDAQ: NTGR), the worldwide leading provider of award-winning advanced mesh WiFi for home and office, has today announced the addition of a new tri-band mesh system to the family of Nighthawk Mesh — Nighthawk® Tri-band Mesh WiFi 6 System (MK83). Providing powerful mesh WiFi 6, this latest offering from NETGEAR is designed to blanket the whole home with high-performance WiFi to manage more devices on the network and eliminate dead zones in every room of the house.

The powerful quad-core processor of the Nighthawk Tri-band Mesh WiFi 6 system delivers more processing power than WiFi 5, increasing the overall WiFi

performance<sup>i</sup>. This enables the mesh system to support the demands of today's homes from streaming, gaming, video conferencing for distance learning and remote work to powering the growth of smart home devices. Get immersed in UHD streaming and enjoy lag-free gaming with Nighthawk's combined WiFi speeds of up to 3.6Gbps that is more than capable of delivering up to Gigabit internet speeds<sup>ii</sup> throughout out the home. Newer WiFi 6 technology powers up to four times the performance and capacity of previous generation WiFi 5 (802.11ac) but still provides 100% backwards compatibility to earlier generations of WiFi devices (802.11a/b/g/n/ac) so all devices can connect at top speeds.

Setup and management of the Nighthawk Tri-band Mesh WiFi 6 System is easy with the Nighthawk App. The app also runs NETGEAR Armor<sup>iii</sup>, an advanced cybersecurity solution that makes it easy to run internet speed tests, pause the internet, manage device connections and set up a separate guest WiFi that provides internet access to visiting friends.

The Nighthawk brand of high-performance routers and mesh WiFi systems with advanced network settings and sleek black designs are a favorite amongst tech savvy customers. Nighthawk Tri-band Mesh WiFi 6 System features the ability to customize household WiFi settings by enabling separate internet connections with different WiFi names. This capability creates new control over home WiFi performance. For example, always-connected smart home devices, such as thermostats, locks, lights, security cameras, garage door openers, and other appliances, can be assigned their own WiFi connection, while personal devices, like computers, smartphones, tablets, TVs, game consoles and bandwidth hungry devices are assigned to a different WiFi name. This segmenting of WiFi connections by device maximizes internet speeds and delivers even smoother video streaming. The new Nighthawk Tri-band Mesh WiFi 6 System also automatically prioritizes video streaming, gaming, and video conferencing applications, such as Zoom and Microsoft® Teams with the dynamic QoS feature to ensure a seamless experience during work or play.

With the popular dual-band Nighthawk Mesh (MK63) designed to provide WiFi coverage for up to a 4,500 square-foot home at a more affordable entry-level price, Nighthawk customers have been asking for a tri-band version that delivers even greater coverage for a larger home. NETGEAR answered this call with this new Nighthawk Tri-band Mesh WiFi 6 System (MK83) that comes in a pack of 3 to deliver WiFi coverage for homes up to 6,500 square feet eliminating WiFi dead zones and ensuring the best-in-class WiFi performance. Tri-band WiFi with a dedicated WiFi connection between the mesh Nighthawk WiFi devices delivers speed and coverage for the entire household's needs. There are four gigabit Ethernet ports available on the router and two on each satellite, which provide plenty of ports to connect wired devices like TVs, game consoles and other streaming devices.

The new Nighthawk Mesh WiFi system Joins the family of NETGEAR best-in-class triband WiFi offerings utilizing the latest WiFi 6 technology. With this introduction, NETGEAR now provides more price performance options to fit the WiFi needs of any household. Nighthawk Mesh WiFi systems range from \$299.99 with dual-band WiFi to this latest addition of the Nighthawk Tri-band Mesh WiFi 6 system at \$499.99 for the router and two satellite kit. Other award-winning solutions include Orbi WiFi 6 Mesh systems that deliver coverage for up to 7,500 square-foot homes and even faster WiFi speeds, which range from \$549.99 (RBK753) to \$999.99 (RBK853) for the premium performance Orbi three-piece kit.

### **NETGEAR®** Armor<sup>™</sup> Cybersecurity:

The Nighthawk Tri-band Mesh WiFi 6 System (MK83) includes a free 30-day trial of NETGEAR Armor™ to protect your connected home from online threats. Armor's multi-layered cybersecurity is built into the new Nighthawk Mesh system to secure all the connected devices including smart devices, smart phones and computers in a home network from phishing and other online threats. The NETGEAR Armor solution also includes the award-winning best-in-class <u>Bitdefender Security</u> anti-virus, anti-malware, and data protection device software for all your smartphones, and computers to provide security against any cyber threats even when not connected to the Nighthawk Mesh system<sup>iv</sup>.

### Availability:

The <u>Nighthawk® Tri-band Mesh WiFi 6 System (MK83)</u> is now available in the US from NETGEAR.com and other online resellers for a manufacturer's suggested retail price of \$499.99 USD.

#### About NETGEAR, Inc.

Since 1996, NETGEAR® (NASDAQ: NTGR) has been the innovative leader in connecting the world to the internet with advanced networking technologies for homes, businesses and service providers around the world. As staying connected has become more important than ever, NETGEAR delivers award-winning network solutions for remote work, distance learning, UHD streaming, online game play and more. By enabling people to collaborate and connect to a world of information and entertainment, NETGEAR is dedicated to providing a range of connected solutions from easy-to-use high-performance Orbi<sup>TM</sup> Mesh WiFi systems, the Nighthawk® portfolio of WiFi routers, cable modems and mobile wireless, cloud-based subscription services for enhanced control and security, to smart networking products and video over Ethernet for Pro AV applications.

The company is headquartered out of San Jose, Calif. with offices located around the globe. More information is available from the NETGEAR Investor Page or by

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Safe Harbor Statement under the Private Securities Litigation Reform Act of 1995 for NETGEAR, Inc.: This press release contains forward-looking statements within the meaning of the U.S. Private Securities Litigation Reform Act of 1995. Specifically, statements concerning NETGEAR's business and the expected performance characteristics, specifications, reliability, market acceptance, market growth, specific uses, user feedback and market position of NETGEAR's products and technology are forward-looking statements within the meaning of the Safe Harbor. These statements are based on management's current expectations and are subject to certain risks and uncertainties, including, without limitation, the following: the actual price, performance and ease-of-use of NETGEAR's products may not meet the price, performance and ease-of-use requirements of customers; product performance may be adversely affected by real world operating conditions; failure of products may under certain circumstances cause permanent loss of end user data; new viruses or Internet threats may develop that challenge the effectiveness of security features in NETGEAR's products; the ability of NETGEAR to market and sell its products and technology; the impact and pricing of competing products; and the introduction of alternative technological solutions. Further information on potential risk factors that could affect NETGEAR and its business are detailed in the Company's periodic filings with the Securities and Exchange Commission. NETGEAR undertakes no obligation to release publicly any revisions to any forward-looking statements contained herein to reflect events or circumstances after the date hereof or to reflect the occurrence of unanticipated events.

i As compared to an AC1200 2x2 router

<sup>&</sup>lt;sup>ii</sup> Maximum wireless signal rate derived from IEEE standard 802.11 specifications. Actual data throughput and wireless coverage will vary and be lowered by network and environmental conditions, including network traffic volume, device limitations, and building construction. NETGEAR makes no representations or warranties about this product's compatibility with future standards. Up to 3600 Mbps wireless speeds achieved when connecting to other 802.11ax 3600 Mbps devices.

iii NETGEAR Armor is free for a 30-day trial then requires an annual subscription to continue with this valuable cybersecurity service.

<sup>iv</sup> On-the-go protection available once the Bitdefender for NETGEAR Armor app is downloaded and installed on a given device.

## Contacts

U.S. Media Contact: Nathan Papadopulos, (408) 890-3889,

NPapadopulos@netgear.com

U.S. Sales Inquiries: (408) 907-8000, sales@netgear.com

Industry: <u>Software Internet Hardware Data Management</u>

<u>Consumer Electronics</u> <u>Technology</u> <u>Mobile/Wireless</u> <u>Security</u>

# **NETGEAR®**

NETGEAR, INC.

∠ NASDAQ:NTGR

### **RELEASE SUMMARY**

Introducing the new Nighthawk Tri-band Mesh WiFi 6 system delivers more processing power than WiFi 5, increasing the overall WiFi performance.

#### **RELEASE VERSIONS**

English

#### **HASHTAGS**

#MESH WIFI

#WIFI6

#### **CONTACTS**

U.S. Media Contact: Nathan Papadopulos, (408) 890-3889,

NPapadopulos@netgear.com

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## NETGEAR® Reports Fourth Quarter and Full Year 2024 Results

SAN JOSE, Calif.--(BUSINESS WIRE)--NETGEAR, Inc. (NASDAQ: NTGR), a global leader in intelligent networking solutions for businesses, homes, and service providers, today reported financial results for the fourth quarter and full year ended December 31, 2024. Q4 2024 Net...

# NETGEAR Schedules Fourth Quarter and Full Year 2024 Results Conference Call

SAN JOSE, Calif.--(BUSINESS WIRE)--NETGEAR®, Inc. (NASDAQ: NTGR), a global leader in intelligent networking solutions for businesses, homes, and service providers, today announced that it will hold a conference call with investors and analysts on Wednesday, February 5 at 5:0...

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## EXHIBIT 4

### December 1, 2023 Response to NETGEAR's Interrogatory No. 8

The '442 Patent's invention also satisfies a long-felt need. A fundamental challenge in developing wireless networks for homes and offices is the question of how to expand the coverage area of the wireless network without sacrificing bandwidth. While predecessor devices called range extenders succeeded in extending the coverage area of wireless networks, the loss of bandwidth that resulted from the fact that these devices communicated with the router and client devices over the same band plagued them. Notably, range extenders could cut a Wi-Fi network's data capacity by half (or worse) when routing data between client devices and the internet.

The novel elements of the '442 Patent overcame these challenges by using multiple, differentiated radios in each relay. Each relay contains multiple software radios, e.g., operating on different bands. One of the radios connects back to the edge router and the internet (as well as to some client devices), and the other radio connects only to client devices. Each relay can then be equipped with a "control block" that can shuttle data between the two radios within the satellite. Professional approval and copying by others of these patented features is evidenced by the fact that dozens of competing Mesh WiFi systems use multiple, differentiated radios. (See. e.g., https://www.cnet.com/home/internet/best-meshwifi-routers/). And industry praise is often experienced implementation with the differentiated radios. (See, e.g., businesswire.com/news/home/20210316005906/e n/NETGEAR-Introduces-Powerful-New-Triband-Mesh-WiFi-to-the-Portfolio-of-Nighthawk-Mesh-WiFi-6-Systems) ("[w]ith the popular dualband Nighthawk Mesh (MK63) designed to provide WiFi coverage for up to a 4,500 squarefoot home at a more affordable entry-level price, Nighthawk customers have been asking for a triband version that delivers even greater coverage for a larger home.") The commercial success of mesh systems that practice the '442 Patent, including the Accused Products in this litigation further confirm the validity of the '442 Patent. There is a clear nexus between these secondary considerations and the novel elements of the claimed invention.

### July 9, 2024 Expert Rebuttal Report of Dr. Harry Bims

- ¶ 245 The '442 Patent's invention also satisfies a long-felt need. A fundamental challenge in developing wireless networks for homes and offices is the question of how to expand the coverage area of the wireless network without sacrificing bandwidth. While predecessor devices called range extenders succeeded in extending the coverage area of wireless networks, the loss of bandwidth that resulted from the fact that these devices communicated with the router and client devices over the same band plagued them. Notably, range extenders could cut a Wi-Fi network's data capacity by half (or worse) when routing data between client devices and the internet.
- ¶ 246 The novel elements of the '442 Patent overcame these challenges by using multiple, differentiated radios in each relay. Each relay contains multiple software radios, e.g., operating on different bands. One of the radios connects back to the edge router and the internet (as well as to some client devices), and the other radio connects only to client devices. Each relay can then be equipped with a "control block" that can shuttle data between the two radios within the satellite. Professional approval and copying by others of these patented features is evidenced by the fact that dozens of competing Mesh WiFi systems use multiple, differentiated radios. (See. https://www.cnet.com/home/internet/best-meshwifi-routers/). (TT-N-93562-581) And industry experienced with praise is often implementation of differentiated radios. (See, e.g., https://www.businesswire.com/news/home/20210 316005906/en/NETGEAR-Introduces-Powerful-New-Triband-Mesh-WiFi-to-the-Portfolio-of-Nighthawk-Mesh-WiFi-6-Systems) 0008657-658) ("[w]ith the popular dual-band Nighthawk Mesh (MK63) designed to provide WiFi coverage for up to a 4,500 square foot home at a more affordable entry-level price, Nighthawk customers have been asking for a triband version that delivers even greater coverage for a larger home.") The commercial success of mesh systems that practice the '442 Patent, including the Accused Products in this litigation further confirm the validity of the '442 Patent. There is a clear nexus between these secondary considerations and the novel elements of the claimed invention.

## EXHIBIT 5

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TO	DELT	'A T	IC
TV	DELT	AL	JLU.,

Plaintiff,

Civil Action No. 13-1835-RGA

v.

**2WIRE INC.**,

Defendant.

#### FURTHER ORDER AFTER PRETRIAL CONFFERENCE RE: FAMILY 6

Now, this 12th day of July, 2022, IT IS HEREBY ORDERED that:

- 1. Defendant's Motion in Limine #3 about secondary considerations is **GRANTED**.
- 2. During the hearing, Plaintiff discussed two documents as demonstrating nexus between the two asserted claims and secondary considerations: (1) the "Ubermatrix" and (2) the VDSL2 standard (ITU-T G.993.2), as was noted in Dr. Madisetti's expert testimony. I have considered the parties' additional filing on this issue. (D.I. 1614).
- 3. First, I find that Plaintiff cannot rely on the Ubermatrix to demonstrate nexus. According to Plaintiff, "Dynamic change of interleaver depth (the patented invention) is one of [2,500 product] requirements [in the Ubermatrix]." (D.I. 1614 at 2-3). This alone cannot provide "a legally and factually sufficient connection between the evidence and the patented invention" to demonstrate a nexus to the claims. *Henny Penny Corp. v. Frymaster LLC*, 938 F.3d 1324, 1332 (Fed. Cir. 2019). Further, because Plaintiff's expert did not address the Ubermatrix (*see* D.I. 1600-18, Exhibit F at ¶213), Plaintiff also cannot provide expert testimony at trial to demonstrate nexus based on the Ubermatrix. *See Cot'n Wash, Inc. v. Henkel Corp.*, 56 F. Supp. 3d 626, 650

- (D. Del. 2014), aff'd sub nom. Cot'n Wash Inc. v. Sun Prod. Corp., 606 F. App'x 1009 (Fed. Cir. 2015) ("In order to demonstrate commercial success in the context of secondary considerations of non-obviousness, an expert must establish a nexus between that commercial success and the patented technology."). Thus, Plaintiff is precluded from relying on evidence of secondary considerations that would require the Ubermatrix to demonstrate nexus because the inclusion of such evidence at trial would be irrelevant. See Ormco Corp. v. Align Tech., Inc., 463 F.3d 1299, 1311-12 (Fed. Cir. 2006) ("Evidence of commercial success, or other secondary considerations, is only significant if there is a nexus between the claimed invention and the commercial success.").
- 4. Second, I disagree with Plaintiff that the inclusion of the patented invention as a new feature in the G.993.2 standard demonstrates nexus between the "commercial success of 2Wire's accused products" and the asserted claims. (D.I. 1600-17 at 7). The G.993.2 standard lists "optional ... dynamic interleaver change" as one of more than 30 changes relative to the previous version (G.993.1) of the standard. (D.I. 1614-1). Based on this, Plaintiff's expert, Dr. Madisetti, opined that "the G.993.2 standard expressly highlights dynamic change of interleaver depth as one of a limited number of beneficial new features adopted into the [G.933.2] standard." (D.I. 1600-18, Exhibit F at ¶213). Without any explanation regarding why this inventive feature drove sales of products relying on this standard, as opposed to the more than 30 other new features, or even the countless features of the previous version of the standard, Plaintiff has not shown that it can provide "a legally and factually sufficient connection between the evidence and the patented invention" to demonstrate a nexus to the claims. *Henny Penny*, 938 F.3d at 1332.
- 5. Moreover, even "[a]ssuming [Plaintiff] could present evidence establishing a [minimal] nexus between the [commercial success of products using the G.993.2 standard or subject to the Ubermatrix product requirements, including 2Wire's products,] and the patented inventions ..., I

Case 1:22-cv-00981-JLH Document 397 Filed 07/29/25 Page 836 of 954 PageID #:

conclude that, even with a limiting instruction, the probative value of [that commercial success] is

substantially outweighed by the risk of unfair prejudice." EMC Corp. v. Pure Storage, Inc., 2016

WL 775742, at \*3 (D. Del. Feb. 25, 2016). Infringement is not at issue in this trial and allowing

Plaintiff to rely on sales of products, including those of 2Wire's accused products, as evidence of

commercial success poses a substantial risk of confusing and misleading the jury.

6. For these reasons, I preclude Plaintiff from relying on evidence of secondary considerations

that rely on the Ubermatrix or changes to the G.993.2 standard to demonstrate nexus. Based on

my understanding of the parties' positions during the pretrial hearing, including that licensing is

not at issue as a secondary consideration, I have now addressed all the contested issues regarding

Plaintiff's evidence of secondary considerations. If I am wrong about that, the parties should

advise me by letter no later than Friday identifying any remaining issues.

Entered this 12th day of July, 2022.

United States District Judge

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Case No. 22-981-JLH

(Consolidated)

Plaintiff,

**JURY TRIAL DEMANDED** 

v.

**NETGEAR, INC.,** 

Defendant.

TRACKTHINGS LLC'S OPPOSITION TO DEFENDANT'S MOTION IN LIMINE NO. 1

Plaintiff TrackThings LLC ("TrackThings") respectfully opposes Defendant NETGEAR Inc.'s ("NETGEAR") first motion *in limine* ("MIL").

## I. TrackThings' Opposition to Defendant's MIL NO. 1: To Exclude Evidence, Testimony, or Argument Regarding Secondary Considerations of Non-obviousness.

NETGEAR's MIL should be denied as presenting an untimely dispositive motion, asking the Court itself to address the sufficiency of the evidence and exclude appropriately disclosed opinions at an improperly late stage. "An *in limine* motion is not a proper vehicle for a party to ask the Court to weigh the sufficiency of the evidence to support a particular claim or defense, because '[t]hat is the function of a motion for summary judgment, with its accompanying and crucial procedural safeguards." *AMAG Pharm. v. Sandoz, Inc.*, No. 16-cv-1508 (PGS), 2018 WL 1041035, at \*1-2 (D.N.J. Feb. 22, 2018). And courts in this district routinely deny motions *in limine* in name that seek summary judgment in fact. *See, e.g., 10X Genomics, Inc v. Vizgen, Inc.*, No. 22-595-MFK, 2025 WL 625684, at \*2 (D. Del. Jan. 27, 2025) (Defendant could not "obtain via a motion *in limine* a substantive ruling regarding the viability of plaintiffs' willfulness claim" absent a prior summary judgment motion). NETGEAR failed to move for summary judgment as to secondary considerations, and NETGEAR's motion can be denied on that basis alone.

Moreover, while NETGEAR counters that "this Court has routinely granted motions in *limine* excluding [] evidence" (Br. at 3)<sup>3</sup> as to secondary considerations, NETGEAR's cited case

<sup>&</sup>lt;sup>1</sup> See also Bradley v. Pittsburgh Bd. of Educ., 913 F.2d 1064, 1069 (3d. Cir. 1990) ("Unlike a summary judgment motion, which is designed to eliminate a trial in cases where there are no genuine issues of fact, a motion *in limine* is designed to narrow the evidentiary issues for trial").

<sup>&</sup>lt;sup>2</sup> See also Cirba Inc. v. VMware, INC., No. 19-742-LPS, 2020 WL 1316464, at \*2 (D. Del. Jan. 6, 2020) (denying motion to exclude "§ 102(g) defense" "is more akin to a motion for summary judgment, as it contends that there is not sufficient evidence from which a reasonable jury could find corroboration," where plaintiff "did not seek to file a motion for summary judgment."); Int'l Bus. Mach. Corp. v. Zynga Inc., No. 22-590-GBW, 2024 WL 3993290, at \*1 (D. Del. Aug. 29, 2024); Datacore Software Corp. v. Scale Computing, Inc., No. 22-535-GBW, 2024 WL 3823001, at \*2 (D. Del. Aug. 14, 2024).

<sup>&</sup>lt;sup>3</sup> "Br. \_" refers to NETGEAR's opening motion *in limine* one.

law does not support the relief it now seeks. NETGEAR's primary citation, *EMC v. Pure Storage*, did not concern an *in limine* motion seeking to preclude secondary considerations *in toto*, but rather a request to exclude particular "evidence and argument concerning *Pure's pre-suit knowledge of the asserted patents.*" No. 13-1985-RGA, 2016 WL 775742, at \*1 (D. Del. Feb. 25, 2016). Br. at 3. The plaintiff countered that such pre-suit knowledge was *relevant to* secondary considerations, but the Court disagreed while finding that "pre-suit knowledge of the asserted patents, as such, is [] not probative of commercial success or industry praise of the patented invention." *Id. E.I. Dupont* is similarly situated—the defendant there sought to exclude "any argument or evidence of *copying*," the plaintiff countered that a purported "near simultaneous invention . . . is a secondary consideration," and the court excluded the argument finding that there was "no direct evidence that Unifrax copied from DuPont," alongside a "dearth of circumstantial evidence" regarding the same. <sup>4</sup> Neither case supports a generalized *in limine* exclusion of secondary considerations, rather both concerned the propriety of particular arguments and evidence over objections of relevance.

NETGEAR's citation to *MiiCs*<sup>5</sup> is closer to the mark, but rather than supporting its motion, in fact demonstrates why denial is appropriate. In *MiiCs* the court *did* provisionally exclude the presentation of secondary considerations, but only did so based on the fact that "[p]laintiffs . . . concede[d] that they have no expert testimony to support a finding of 'nexus,'" and, even then, still permitted plaintiffs' to file a subsequent proffer "[s]hould Plaintiffs actually have some evidence from which a jury could conclude there was a 'nexus." *MiiCs*, at \*1. Here, unlike in *MiiCs*, TrackThings and its expert Dr. Bims did provide evidence and opinions regarding nexus,

<sup>4</sup> E.I. Dupont de Nemours & Co. v. Unifraxi, LLC, No. 14-1250-RGA, 2017 WL 11573721, at \*2-3 (D. Del. May 5, 2017) (emphasis added).

<sup>&</sup>lt;sup>5</sup> MiiCs & Partners Am., Inc. v. Toshiba Corp., No. 14-803-RGA, 2017 WL 11573565, at \*1 (D. Del. Oct. 12, 2017).

opining not only that "[t]here is a clear nexus between these secondary considerations and the novel elements of the claimed invention," but also providing a specific explanation of that nexus:

The '442 Patent's invention also satisfies a long-felt need. A fundamental challenge in developing wireless networks for homes and offices is the question of how to expand the coverage area of the wireless network without sacrificing bandwidth. While predecessor devices called range extenders succeeded in extending the coverage area of wireless networks, the loss of bandwidth that resulted from the fact that these devices communicated with the router and client devices over the same band plagued them. Notably, range extenders could cut a Wi-Fi network's data capacity by half (or worse) when routing data between client devices and the internet.

The novel elements of the '442 Patent overcame these challenges by using multiple, differentiated radios in each relay. Each relay contains multiple software radios, e.g., operating on different bands. One of the radios connects back to the edge router and the internet (as well as to some client devices), and the other radio connects only to client devices. Each relay can then be equipped with a "control block" that can shuttle data between the two radios within the satellite.

Ex. A at ¶¶ 245-246. NETGEAR's motion fails to grapple with these opinions, and instead simply characterizes Dr. Bims' opinions as "conclusory," but Federal Circuit precedent holds that "[i]t is within the province of the fact-finder to resolve [] factual disputes regarding whether a nexus exists between the commercial success of the product and its patented features." Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1574 (Fed. Cir. 1996). And NETGEAR has failed to provide any precedent finding otherwise—i.e., holding that exclusion of timely and uncontroversial opinions as to secondary considerations should be excluded. Accordingly, TrackThings respectfully requests that the Court deny this motion in limine.

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<sup>&</sup>lt;sup>6</sup> NETGEAR also complains that Dr. Bims' opinions were previously provided in an interrogatory response, a complaint which rings hollow given that NETGEAR itself tendered an interrogatory seeking "any secondary considerations" (Br. Ex. 1 at pg. 147) and presumably would have sought to strike Dr. Bims' ultimate opinions if they were *not* timely disclosed during fact discovery.

<sup>&</sup>lt;sup>7</sup> NETGEAR also implies that TrackThings' supporting evidence consists only of "two third-party documents" cited by Dr. Bims, but overlooks the substantial record evidence supporting secondary considerations of non-obviousness elsewhere, as just one example, the sections of TrackThings' damages expert report which discuss and collect evidence as to the Accused Products' commercial success and long felt need. Ex. B (Holzen Opening Report) at ¶¶33-37, 39 and ¶¶165-167.

Respectfully submitted,

Dated: New York, New York June 13, 2025

### MCCARTER & ENGLISH, LLP

### /s/ Alexandra M. Joyce

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Attorneys for Plaintiff TrackThings LLC

## Exhibit A

### HIGHLY CONFIDENTIAL – ATTORNEYS' EYES ONLY

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

NETGEAR, INC.,

Defendant.

C.A. No.: 22-981-RGA-JLH (CONSOLIDATED)

**JURY TRIAL DEMANDED** 

EXPERT REBUTTAL REPORT OF DR. HARRY V. BIMS REGARDING VALIDITY OF U.S. PATENT NOS. 9,642,017, 9,332,442, AND 10,107,893

including Google (see <a href="https://support.google.com/googlenest/answer/7182746">https://support.google.com/googlenest/answer/7182746</a> ("[a]dditional points can be added to get better coverage in hard-to-cover areas like hallways and near walls for outdoor coverage")) (TT-N-0090593-594) and Amazon (see <a href="https://www.businesswire.com/news/home/20160223005977/en/eero-Introducesthe-">https://www.businesswire.com/news/home/20160223005977/en/eero-Introducesthe-</a>

World%E2%80%99s-First-Home-WiFi-System (TT-N-0008657-658) ("Every home has a unique blueprint, but proper placement allows you to get signal to any corner of your home, no matter the size or shape")), evidencing professional approval and copying by others. These features have also garnered industry praise for NETGEAR. (See. e.g., https://www.increasebroadbandspeed.co.uk/review-netgear-orbi-wifi6 ("A key strength of the Orbi system is the provision of step-by-step instructions via the mobile app throughout the set-up process. For example, to help position the satellites, the app instructed, 'Place your satellites at table height, away from fish tanks, metal shelves, microwave ovens and other wireless devices."")). (TT-N-0093736-747) The '017 Patent solves this problem by using a distributed "computation unit" that "determines the best placement of a new relay to improve the link integrity of the network." The commercial success of mesh systems that practice the '017 Patent, including the Accused Products in this litigation further confirm the validity of the '017 Patent.

245. The '442 Patent's invention also satisfies a long-felt need. A fundamental challenge in developing wireless networks for homes and offices is the question of how to expand the coverage area of the wireless network without sacrificing bandwidth. While predecessor devices called range extenders succeeded in extending the coverage area of wireless networks, the loss of bandwidth that resulted from the fact that these devices communicated with the router and client devices over the same band plagued them. Notably, range extenders could cut a Wi-Fi network's data capacity by half (or worse) when routing data between client devices and the internet.

246. The novel elements of the '442 Patent overcame these challenges by using multiple, differentiated radios in each relay. Each relay contains multiple software radios, e.g., operating on different bands. One of the radios connects back to the edge router and the internet (as well as to some client devices), and the other radio connects only to client devices. Each relay can then be equipped with a "control block" that can shuttle data between the two radios within the satellite. Professional approval and copying by others of these patented features is evidenced by the fact that dozens of competing Mesh WiFi systems use multiple, differentiated radios. (See, e.g., https://www.cnet.com/home/internet/best-mesh-wifi-routers/). (TT-N-93562-581) And industry praise is often experienced with the implementation of differentiated radios. (See, e.g., https://www.businesswire.com/news/home/20210316005906/en/NETGEAR-Introduces-Powerful-New-Triband-Mesh-WiFi-to-the-Portfolio-of-Nighthawk-Mesh-WiFi-6-Systems) (TT-N-0008657-658) ("[w]ith the popular dual-band Nighthawk Mesh (MK63) designed to provide WiFi coverage for up to a 4,500 square foot home at a more affordable entry-level price, Nighthawk customers have been asking for a triband version that delivers even greater coverage for a larger home.") The commercial success of mesh systems that practice the '442 Patent, including the Accused Products in this litigation further confirm the validity of the '442 Patent.

There is a clear nexus between these secondary considerations and the novel elements of the claimed invention.

247. The '893 Patent's invention also satisfies a long-felt need. As an example, part of

the power of mesh systems is the novel capacity for each relay to communicate with any other relay as necessary to optimize network performance. This allows mesh systems to form distinct topologies that can adapt to the particular shape of the home being covered. For example, the mesh satellites can be configured in a "star" topology where each satellite connects back to the

Case 1:22-cv-00981-JLH Document 397 Filed 07/29/25 Page 846 of 954 PageID #: 18436

I, Harry Bims, declare under penalty of perjury under the laws of the United States of America that the foregoing statements made herein of my own knowledge are true and correct to the best of my knowledge and belief and the foregoing statements made on information and belief are believed to be true.

Dated: July 9, 2024

Respectfully submitted,

Dr. Harry V. Bims

## Exhibit B

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	)
Plaintiff,	)
v.	) C.A. No. 1:22-cv-00981-JLH
NETGEAR, INC.	)
Defendant.	) ) )

## AFFIRMATIVE EXPERT REPORT STEPHEN A. HOLZEN

Stephen A. Holzen January 25, 2024 cost of production abroad, resulting in less expensive products for domestic consumers. Many manufacturers outsource production to low-cost countries, resulting in the number of establishments and employees declining. For example, CommScope, the second-largest operator in this industry, has production plants in China. Domestic telecommunication companies mainly engage in research and development, product design, high-end product manufacturing, and reexporting finished networking equipment.

31. Industry revenue is expected to fall at a CAGR of 1.2% to reach \$4.6 billion over the years to 2028. Meanwhile, the value of both industry imports and exports are set to decline in this period even as demand for lower-quality wired telecommunications equipment will remain and the market for more sophisticated, domestically manufactured equipment has grown. However as overseas production remains as a more cost-efficient way to produce products, this industry will still endure high import penetration, limiting export growth. In the domestic market, network upgrades will drive demand as the ongoing convergence in media and telecommunications technologies necessitates information technology investments by internet service providers and telecommunications carriers.

### 4. Overview of the Wireless Mesh Networking Industry

32. I understand from Dr. Bims that the technology at issue in this case relates to wireless mesh networking technology. Generally, I understand that the wireless mesh networking technology disclosed in the IEEE 802.11s standard allowed for multiple routers to communicate with one another through a multi-hop protocol. However, the standard was incomplete and did not address all problems associated with the operation of wireless mesh networks so as to adequately extend network coverage at a reliable speed. I also understand from Dr. Bims that few, if any, commercial products generically implement the IEEE 802.11s standard in the sense that they would be compatible with each other (as is usually the expectation with standards), but rather that different manufacturers generally have proprietary implementations that are not compatible with each other.

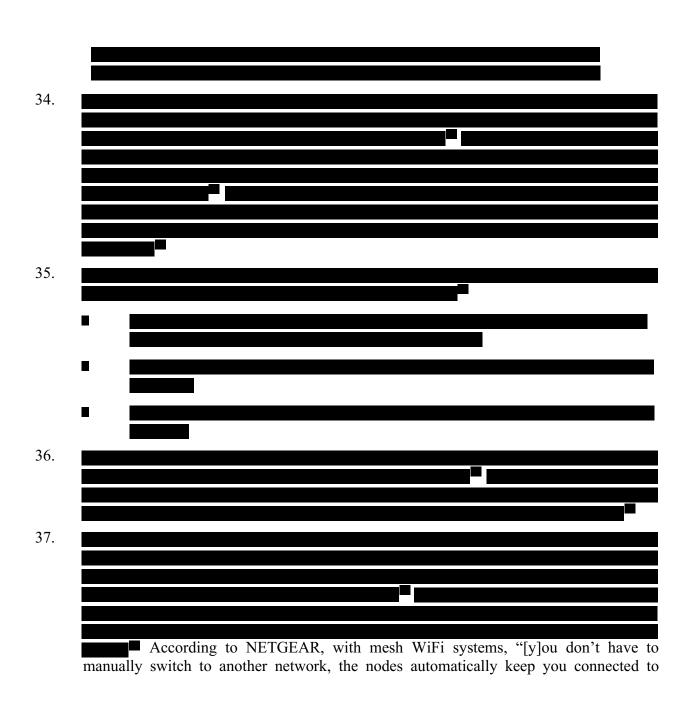
<sup>&</sup>lt;sup>28</sup> See also TT-N-0082606-624, at 611.

<sup>&</sup>lt;sup>29</sup> Interviews with Dr. Bims.

<sup>&</sup>lt;sup>30</sup> Interviews with Dr. Bims.

<sup>&</sup>lt;sup>31</sup> Interviews with Dr. Bims.

<sup>&</sup>lt;sup>32</sup> NETGEAR-TRACK-007040-071 at 041. *See also* Deposition of Ravindra Bhilave, December 8, 2023, pp. 89-90; NETGEAR-TRACK-008718-760 at 720.



<sup>33</sup> NETGEAR-TRACK-007040-071 at 042.

<sup>&</sup>lt;sup>34</sup> NETGEAR-TRACK-007040-071 at 042.

<sup>&</sup>lt;sup>35</sup> NETGEAR-TRACK-007040-071 at 042.

<sup>&</sup>lt;sup>36</sup> NETGEAR-TRACK-007040-071 at 043. (Deposition of Sandeep Harpalani, November 28, 2023, p. 21). (Deposition of Sandeep Harpalani, November 28, 2023, p. 21).

<sup>&</sup>lt;sup>38</sup> NETGEAR-TRACK-007040-071 at 044.

<sup>&</sup>lt;sup>39</sup> Deposition of Sandeep Harpalani, November 28, 2023, pp. 23-24.

<sup>40</sup> https://www.netgear.com/hub/technology/wifi-extender-vs-mesh-wifi-which-is-better/.

whichever node has the strongest signal, giving you seamless coverage everywhere."<sup>41</sup> NETGEAR also advertises the following advantages of mesh WiFi systems:<sup>42</sup>

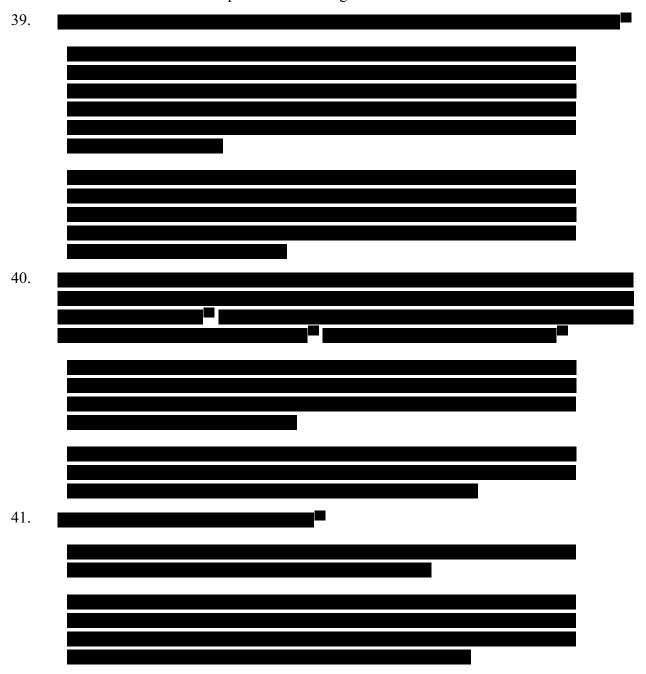
- Extending your WiFi to your whole home or bigger offices[;]
- Moving around at home and always staying connected to your WiFi[;]
- Removing all signal dead zones[;]
- Getting the fastest WiFi speeds in large spaces.
- 38. In addition, NETGEAR publicizes the additional benefits that mesh WiFi products provide as compared to conventional WiFi extenders: 43
  - <u>Easy to Set Up</u>: One of the main benefits of mesh WiFi is that it is very easy to set up. After initial setup, your mesh router is ready to connect to its preconfigured satellites. Moreover, you can simply plug in the first node and then add more nodes as needed. Adding satellites is much easier than setting up multiple WiFi extenders, which each needs to be configured independently from the router.
  - <u>Flexible Coverage</u>: Another benefit of mesh WiFi is that it offers flexible coverage. You can add or remove nodes as needed to change the coverage area. This is perfect for people who move often or have a large home or office.
  - <u>Better Speeds</u>: Mesh WiFi systems offer better speeds than WiFi extenders because the mesh router and satellite nodes are specially tuned to create a unified network. They also cooperate by instantly handing-off connections to devices to the fastest point as they move around the home. The nodes in a mesh network communicate wirelessly, so the WiFi signal does not have to travel from the router to the node and back out again.
  - <u>Very Reliable</u>: Mesh WiFi systems are also very reliable. This is because they use multiple nodes, so if one node is too far away or goes down, the others can still provide a WiFi signal. WiFi extenders, on the other hand, only have one device. If that device goes down, you will not be able to connect to the [I]nternet.
  - <u>Easy to Scale</u>: As your WiFi and connectivity needs increase, you'll have to increase capacity to match usage. This is one of the things that makes mesh WiFi systems ideal as they're easy to scale. You can simply add more nodes to the mesh network as needed. This is perfect for businesses that are constantly expanding.
  - <u>Minimizes Dead zones</u>: Mesh WiFi systems are also good at minimizing dead zones. Dead zones are areas in your home or office where the WiFi signal is weak or non-existent. This is because mesh WiFi systems use multiple nodes that

<sup>41</sup> https://www.netgear.com/hub/technology/wifi-extender-vs-mesh-wifi-which-is-better/.

<sup>42</sup> https://www.netgear.com/hub/technology/wifi-extender-vs-mesh-wifi-which-is-better/.

<sup>&</sup>lt;sup>43</sup> https://www.netgear.com/hub/technology/wifi-extender-vs-mesh-wifi-which-is-better/. *See also* https://kb.netgear.com/31031/How-is-an-Orbi-system-different-from-an-extender/.

communicate with each other wirelessly. So, even if one node is in a dead zone, the others can still provide a WiFi signal.



<sup>&</sup>lt;sup>44</sup> Deposition of Sandeep Harpalani, November 28, 2023, pp. 13-14.

<sup>&</sup>lt;sup>45</sup> Deposition of Ravindra Bhilave, December 8, 2023, pp. 51-52.

<sup>&</sup>lt;sup>46</sup> Deposition of Joseph Emmanuel, December 13, 2023, p. 19.

<sup>&</sup>lt;sup>47</sup> Deposition of Sandeep Harpalani, November 28, 2023, p. 23.

<sup>&</sup>lt;sup>48</sup> Deposition of Sandeep Harpalani, November 28, 2023, p. 15.

## 11. Factor 11: The Extent to Which The Infringer Has Made Use Of The Invention And Any Evidence Probative Of The Value Of That Use

- 162. This factor introduces economic considerations that relate to the success of a patentembodying product and inquire as to how that success would have been important to the parties in the hypothetical negotiation. In theory, this factor relates to Defendant's use of the patented technology and any evidence demonstrative of the value gained from that use. In this section, I first analyze the revenues, costs, and profits that the Defendant earned from the Accused Products and then discuss the current popularity and commercial success of the Accused Products. I then analyze the improved performance metrics that are suggestive of the value gained, in part, from the Defendant's use of the Patents-in-Suit.
  - a. Analysis of Accused Revenues, Costs, and Profits
- 163. I have analyzed the revenues, average selling prices, and gross profits that NETGEAR earned from the sale of the Accused Products from April 6, 2017 through August 27, 2023. A summary of this information is presented in the table below.<sup>267</sup>

Hardware Net Revenue	
Units Sold	
Average Selling Price	
Gross Profit	
Gross Profit Per Unit	
Gross Margin	

- 164. To the extent that any additional data is produced by Defendant subsequent to the date of this report, I reserve the right to update my analysis and conclusions.
  - b. The Popularity and Commercial Success of the Accused Products

165.	According to Mr. Harpalani, NETGEAR's Orbi product line has received

<sup>&</sup>lt;sup>267</sup> Exhibit 7.0. *See also* NETGEAR-TRACK-006326-9536.

<sup>&</sup>lt;sup>268</sup> Deposition of Sandeep Harpalani, November 28, 2023, pp. 73-74.

<sup>&</sup>lt;sup>269</sup> Deposition of Sandeep Harpalani, November 28, 2023, p. 74.

- 166. In addition, NETGEAR has publicized to its investors its entrance into and presence in the WiFi mesh product market, as detailed below.<sup>272</sup>
  - February 7, 2017: "We are the undisputed #1 WiFi router provider in the North America retail market, and we continue to gain share. We followed up that success in late Q3 of 2016 with the introduction of Orbi, the WiFi tri-band mesh system for homes."<sup>273</sup>
  - November 8, 2017: "But over the last 4, 5 years, we've added that arsenal with 2 new brands. One is Arlo, the other one is Orbi, representing 2 very new directions. Orbi represents our push into WiFi mesh, and Arlo represents our push into smart home devices."<sup>274</sup>
  - October 25, 2018: "Both our Orbi mesh WiFi product and our lineup of cable modems and gateways were strong performers during the third quarter. As a result, we are pleased to see that we continue to hold 50% market share in U.S. retail WiFi products, which cover mesh, routers, gateways and extenders." 275
  - <u>April 24, 2019</u>: "Furthermore, our WiFi 6 Orbi Mesh products will come to market in the second half of 2019 and future Marvell models." <sup>276</sup>
  - <u>April 27, 2022:</u> "We continue to see momentum in the super-premium mesh market, represented by our \$1,000 plus Orbi 8 and 9 product offerings." <sup>277</sup>
  - <u>April 27, 2022</u>: "Although the overall size of the U.S. consumer WiFi market contracted to roughly flat to pre-pandemic levels, we experienced strong demand for our super-premium higher-margin WiFi mesh products, with higher service

<sup>&</sup>lt;sup>270</sup> https://www.netgear.com/blog/home/ces-2023-innovation-awards/.

<sup>&</sup>lt;sup>271</sup> See, *e.g.*, https://www.netgear.com/about/press-releases/2016/netgear-ces-2017-innovation-awards/; https://www.netgear.com/blog/home/ces-2023-innovation-awards/; https://www.netgear.com/about/press-releases/2020/ces innovation award honorees/.

 $<sup>^{272}</sup> See \ also \ TT-N-0008403-468; \ TT-N-0081945-972; \ TT-N-0081989-016; \ TT-N-0082052-061; \ TT-N-0082098-113; \ TT-N-0082114-132; \ TT-N-0082133-154; \ TT-N-0082155-170; \ TT-N-0082171-184; \ TT-N-0082185-205; \ TT-N-0082222-235; \ TT-N-0082236-250; \ TT-N-0082251-264; \ TT-N-0082265-276; \ TT-N-0082277-290; \ TT-N-0082291-304; \ TT-N-0082305-230; \ TT-N-0082335-347; \ TT-N-0082348-359; \ TT-N-0082360-377; \ TT-N-0082395-411; \ TT-N-0082412-426; \ TT-N-0082427-442; \ TT-N-0082443-457; \ TT-N-0082476-489; \ TT-N-0082500-516; \ TT-N-0082517-532; \ TT-N-0082533-557; \ TT-N-0082558-572; \ TT-N-0082573-586; \ TT-N-0082587-598; \ TT-N-0082606-624; \ TT-N-0082628-641; \ TT-N-0089531-617.$ 

<sup>&</sup>lt;sup>273</sup> TT-N-0082427-442 at 432.

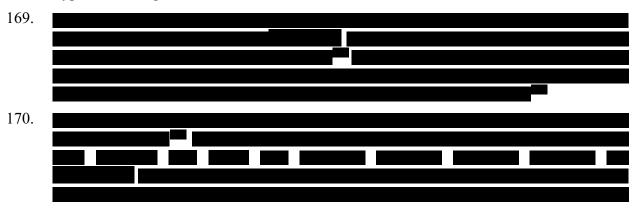
<sup>&</sup>lt;sup>274</sup> TT-N-0081926-944 at 929.

<sup>&</sup>lt;sup>275</sup> TT-N-0082378-394 at 383.

<sup>&</sup>lt;sup>276</sup> TT-N-0082038-051 at 044.

<sup>&</sup>lt;sup>277</sup> TT-N-0082206-221 at 209.

- attach rates underscoring the confidence we have in our strategy for long-term profitable growth."<sup>278</sup>
- <u>July 27, 2022</u>: "Our Orbi 8 and 9 WiFi mesh systems, which are powered by patented tri-band and quad-band antenna designs, enable the very best WiFi speed, capacity and coverage and various residential footprints. All [their] superior performance is consistently validated by industry accolades and awards, including the latest in Tom's Guide. In an article highlighting the 2022 best devices [for] working from home, the Orbi 9 took top honors for best mesh system and was noted for outstanding performance as well as ease setup."<sup>279</sup>
- 167. In the aggregate, this factor has an upward impact on the negotiated royalty rate.
  - 12. Factor 12: The Portion Of The Profit Or Of The Selling Price That May Be Customary In The Particular Business Or In Comparable Businesses To Allow For The Use Of The Invention Or Analogous Inventions
- 168. In general, this factor relates to the "market approach" which is a commonly accepted method for assessing the value of intangible assets. The market approach values assets based on comparable transactions between unrelated parties and "is the process by which value is derived by analyzing transactions involving similar intangible assets that were recently sold or licensed and then comparing these intangible assets to the actual intangible asset." When considering the market approach, an examination of the terms of transfer for similar technology is undertaken and inferences are drawn from those observations to identify terms that the patent holder and the defendant might have agreed to at the hypothetical negotiation.



<sup>&</sup>lt;sup>278</sup> TT-N-0082206-221 at 211.

<sup>&</sup>lt;sup>279</sup> TT-N-0082321-334 at 326.

<sup>&</sup>lt;sup>280</sup> Reilly, Robert F. and Schweihs, Robert P., Guide to Valuing Intangible Assets, 2014, p. 410.

<sup>&</sup>lt;sup>281</sup> Interview with Mr. Gabara; Deposition of Thaddeus Gabara, December 19, 2023, pp. 307-310.

<sup>&</sup>lt;sup>282</sup> Interview with Mr. Gabara; Deposition of Thaddeus Gabara, December 19, 2023, pp. 307-310.

<sup>&</sup>lt;sup>283</sup> Interview with Mr. Gabara; Deposition of Thaddeus Gabara, December 19, 2023, pp. 307-310.

<sup>&</sup>lt;sup>284</sup> See S.D.N.Y. 1:19-cv-09890; Deposition of Thaddeus Gabara, December 19, 2023, pp. 77-80.

<sup>&</sup>lt;sup>285</sup> Complaint for Patent Infringement and Jury Demand, S.D.N.Y. 1:19-cy-09890, October 25, 2019.

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

NETGEAR, INC.,

Defendant.

C.A. No. 22-981-JLH (CONSOLIDATED)

**JURY TRIAL DEMANDED** 

DEFENDANT NETGEAR, INC.'S REPLY IN SUPPORT OF ITS MOTION IN LIMINE NO. 1 TO EXCLUDE EVIDENCE, TESTIMONY, OR ARGUMENT REGARDING SECONDARY CONSIDERATIONS OF NON-OBVIOUSNESS

### TABLE OF EXHIBITS

Ex. 1	Excerpted TrackThings' Responses and Objections to NETGEAR's First Set of Interrogatories, dated September 14, 2023	
Ex. 2	Excerpted Deposition Transcript of Harry Bims' October 21, 2024 Deposition	

TrackThings failed to provide evidence establishing the requisite nexus between purported secondary considerations of non-obviousness and the claimed invention. Thus, introduction of secondary considerations at trial would be irrelevant and risks prejudice and confusion. (See Open., 1, 3.) TrackThings offers two arguments in opposition—that this is a dispositive motion in disguise, and that Dr. Bims addressed secondary considerations. Neither argument has merit. First, resolving this issue via a MIL is appropriate. (See id., 3 (citing cases<sup>2</sup>).) Even TrackThings' cited cases support resolving as a MIL, since NETGEAR only aims to "narrow the evidentiary issues for trial" rather than decide the issue of obviousness altogether to "eliminate a trial." (Oppo., n.1.) TrackThings does not cite any case ruling that secondary considerations are exclusively a dispositive issue. Second, Dr. Bims' statement on secondary considerations is mere ipse dixit without support that cannot provide the missing evidence of nexus. The statements contained in paragraphs 245-246 of Dr. Bims' report (*Id.*, Ex. A) make up the entirety of TrackThings' position on secondary considerations. Those passages include no support: without any citation to evidence, Dr. Bims provides conclusory statements about how the '442 patent supposedly aligns with secondary considerations—statements written by counsel prior to any work on invalidity by Dr. Bims. (Ex. 1, 21-22; Ex. 2, 18:22-19:2.) Dr. Bims then concludes with one sentence claiming that "[t]here is a clear nexus" but without any citation or support. (Oppo., Ex. A, ¶ 246.) This type of ipse dixit is insufficient and gives nothing for the jury to weigh and resolve. TrackThings should be precluded from introducing secondary considerations at trial.

-

<sup>&</sup>lt;sup>1</sup> Even if TrackThings produced evidence of factors such as commercial success and long felt need, there is no factual evidence in the record providing a "'legally and factually sufficient connection"' between such factors and the patented invention sufficient to establish secondary considerations of non-obviousness. *See Fox Factory v. SRAM*, 944 F.3d 1366, 1373 (Fed. Cir. 2019).

<sup>&</sup>lt;sup>2</sup> TrackThings admits that *MiiCs & Partners Am. v. Toshiba*, 2017 WL 11573565, at \*1 (D. Del. Oct. 12, 2017) is "closer to the mark," but attempts to distinguish the case by arguing that Dr. Bims provides evidence and opinions regarding nexus. (Oppo., 2-3.) As discussed, Dr. Bims' report includes no supporting evidence and the opinions therein aren't his—they are attorney argument.

Dated: June 20, 2025 Respectfully submitted,

/s/ James L. Higgins

gpenezic@ycst.com

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## EXHIBIT 1

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

C.A. No.: 22-981-RGA-JLH (CONSOLIDATED)

v.

**JURY TRIAL DEMANDED** 

NETGEAR, INC.,

Defendant.

## PLAINTIFF TRACKTHINGS' RESPONSES AND OBJECTIONS TO DEFENDANT NETGEAR, INC.'S FIRST SET OF INTERROGATORIES (NOS. 1-14)

Pursuant to Federal Rules of Civil Procedure 26 and 33, Plaintiff TrackThings LLC, ("Plaintiff" or "TrackThings"), by its undersigned counsel, hereby submits these objections and responses to Defendant NETGEAR, Inc.'s ("Defendant" or "NETGEAR") First Set of Interrogatories (Nos. 1-14), dated August 15, 2023 (the "Interrogatories" and, individually, each an "Interrogatory").

### **GENERAL OBJECTIONS**

The following General Objections apply to each of the Interrogatories propounded by NETGEAR and, unless otherwise stated, shall have the same force and effect as if set forth in full in response to each of the separately numbered Interrogatories. Although certain of these General Objections may be specifically referred to in response to certain specific Interrogatories, failure to mention those General Objections in response to other Interrogatories shall not be construed as a waiver of those General Objections as to those other Interrogatories. An assertion of the same, similar or additional objections in response to specific Interrogatories does not waive any of these General Objections as to any other Interrogatories:

be provided in this case by TrackThings' expert(s), all of which TrackThings incorporates by reference herein.

### **INTERROGATORY NO. 8:**

Identify and describe in detail, including by narrative, all supporting facts and evidence upon which You intend to rely to establish non-obviousness of the alleged invention(s) of the Patents-in-Suit, including without limitation an identification of any secondary considerations that You contend support the non-obviousness of the alleged invention(s) and an identification of all related Documents.

### **RESPONSE NO. 8:**

TrackThings incorporates its General Objections as if fully set forth herein. TrackThings further objects to this Interrogatory to the extent that it is overly broad, unduly burdensome, and not proportional to the needs of this case, at least to the extent it asks TrackThings to "describe in detail, including by narrative, all supporting facts and evidence." TrackThings objects to this Interrogatory as premature and/or improperly requesting expert discovery.

TrackThings objects to this Interrogatory to the extent it seeks information protected from discovery by the attorney-client privilege, the attorney work product doctrine, or any other applicable privilege or doctrine, immunity, statute, regulation, rule or restriction, and TrackThings will not provide such privileged and/or protected information. The inadvertent production by TrackThings of information protected from disclosure by any such privilege, doctrine, or immunity shall not be deemed a waiver by TrackThings of any such privileges or protections.

Subject to the foregoing objections, TrackThings responds to this Interrogatory as follows: The Patents-in-Suit cover three fundamental pillars necessary for commercially successful mesh systems: intelligent node placement, differentiated radios, and dynamic network reconfiguration. Each of these pillars is a novel element of the inventions claimed in the Patents-in-Suit and marketed by NETGEAR. The validity of the asserted claims is supported by several secondary indicia of non-obviousness. For example, each of the asserted claims from each of the Patents-in-

Suit are valid including as evidenced by the commercial success enjoyed by devices practicing the patented inventions, industry praise for the patented inventions, professional approval, copying by others, and the existence of a long-felt but unsatisfied need for the inventions. There is a clear nexus between these secondary considerations and the novel elements of the claimed invention.

For example, regarding the '017 Patent, as of the filing date of the asserted claims, there was a long-felt, but unmet need for a mesh wireless system that had the claimed features of the asserted claims. The placement of the nodes in a mesh network is important because "Optimal placement of Wi-Fi mesh nodes will ensure you get the most out of your new system" (see, e.g., https://www.howtogeek.com/880578/how-to-place-mesh-router-nodes-for-optimal-coverage/) and "[i]f your mesh node placement is poor, you'll never realize the full benefits of a mesh system" https://www.howtogeek.com/802562/mesh-router-placement-mistakes-to-avoid/). (see, e.g., NETGEAR has repeatedly recognized this importance. See. e.g., https://kb.netgear.com/31029/Where-should-I-place-my-Orbi-satellite ("Adding an Orbi Satellite can improve your system range and performance" and "[t]he distance you should place your Orbi satellite from your Orbi router varies depending on your environment."). Others in the industry recognized have repeatedly this importance well, including Google as https://support.google.com/googlenest/answer/7182746 ("[a]dditional points can be added to get better coverage in hard-to-cover areas like hallways and near walls for outdoor coverage")) and Amazon (see https://www.businesswire.com/news/home/20160223005977/en/eero-Introducesthe-World%E2%80%99s-First-Home-WiFi-System ("Every home has a unique blueprint, but proper placement allows you to get signal to any corner of your home, no matter the size or shape")), evidencing professional approval and copying by others. These features have also garnered industry praise for NETGEAR. (See, e.g.,

https://www.increasebroadbandspeed.co.uk/review-netgear-orbi-wifi6 ("A key strength of the Orbi system is the provision of step-by-step instructions via the mobile app throughout the set-up process. For example, to help position the satellites, the app instructed, 'Place your satellites at table height, away from fish tanks, metal shelves, microwave ovens and other wireless devices."")). The '017 Patent solves this problem by using a distributed "computation unit" that "determines the best placement of a new relay to improve the link integrity of the network." The commercial success of mesh systems that practice the '017 Patent, including the Accused Products in this litigation further confirm the validity of the '017 Patent.

The '442 Patent's invention also satisfies a long-felt need. A fundamental challenge in developing wireless networks for homes and offices is the question of how to expand the coverage area of the wireless network without sacrificing bandwidth. While predecessor devices called range extenders succeeded in extending the coverage area of wireless networks, the loss of bandwidth that resulted from the fact that these devices communicated with the router and client devices over the same band plagued them. Notably, range extenders could cut a Wi-Fi network's data capacity by half (or worse) when routing data between client devices and the internet.

The novel elements of the '442 Patent overcame these challenges by using multiple, differentiated radios in each relay. Each relay contains multiple software radios, *e.g.*, operating on different bands. One of the radios connects back to the edge router and the internet (as well as to some client devices), and the other radio connects only to client devices. Each relay can then be equipped with a "control block" that can shuttle data between the two radios within the satellite. Professional approval and copying by others of these patented features is evidenced by the fact that dozens of competing Mesh WiFi systems use multiple, differentiated radios. (*See, e.g.*, <a href="https://www.cnet.com/home/internet/best-mesh-wifi-routers/">https://www.cnet.com/home/internet/best-mesh-wifi-routers/</a>). And industry praise is often

differentiated experienced with the **implementation** of radios. (See, e.g., businesswire.com/news/home/20210316005906/en/NETGEAR-Introduces-Powerful-New-Triband-Mesh-WiFi-to-the-Portfolio-of-Nighthawk-Mesh-WiFi-6-Systems) ("[w]ith the popular dual-band Nighthawk Mesh (MK63) designed to provide WiFi coverage for up to a 4,500 squarefoot home at a more affordable entry-level price, Nighthawk customers have been asking for a triband version that delivers even greater coverage for a larger home.") The commercial success of mesh systems that practice the '442 Patent, including the Accused Products in this litigation further confirm the validity of the '442 Patent. There is a clear nexus between these secondary considerations and the novel elements of the claimed invention.

The '893 Patent's invention also satisfies a long-felt need. As an example, part of the power of mesh systems is the novel capacity for each relay to communicate with any other relay as necessary to optimize network performance. This allows mesh systems to form distinct topologies that can adapt to the particular shape of the home being covered. For example, the mesh satellites can be configured in a "star" topology where each satellite connects back to the edge router, or in a longer "daisy-chain" topology where a satellite is connected to another satellite with is then connected back to the edge router. The '893 Patent teaches and claims how to dynamically reconfigure these types of networks between these different topologies to improve performance of the system. Netgear has touted and experienced industry praise for this feature (*See, e.g.*, <a href="https://kb.netgear.com/000048458/What-is-daisy-chain-and-how-does-it-work-with-my-Orbi-WiFi-System-or-Nighthawk-Mesh-System;">https://justjooz.com/orbi-satellites-placements/</a>). The commercial success and industry praise of mesh systems that practice the '893 Patent, including the Accused Products in this litigation further confirm the validity of the '893 Patent.

These aspects of the Patents-in-Suit, among others, were long-desired, had not been provided prior to the inventions of the Patents-in-Suit, and provide important benefits to users, including expanding the coverage area of a network, improving the ease of setup, improving system performance (*i.e.*, stability, reliability, and speed), and reducing interference, lags and buffering (e.g. by utilizing differentiated radios). The three TrackThings technologies are necessary for commercially successful mesh systems. As shown by NETGEAR's own materials as well as industry sources, directing users toward placement of relays is a crucial feature to enable the systems to function at their full capacity. Having differentiated radios and a dedicated backhaul is similarly important in order for mesh systems to outperform the prior art. The ability to dynamically reconfigure topology and selfheal is at the heart of the mesh approach.

Discovery is ongoing and TrackThings reserves the right to amend or supplement its response to this Interrogatory in accordance with the Federal Rules of Civil Procedure and any applicable order of the Court. TrackThings also reserves the right to rely on the testimony of witnesses that are deposed and provide information relevant to this Interrogatory.

#### **INTERROGATORY NO. 9:**

Describe in detail the complete legal and factual bases for Your contention, if any, that the Asserted Claims are not invalid under 35 U.S.C. § 112 for insufficient written description, lack of enablement, and/or indefiniteness, including stating the legal and factual bases for any disagreement with the written description, lack of enablement, and/or indefiniteness arguments in NETGEAR's Invalidity Contentions, and an identification of all related Documents.

#### **RESPONSE NO. 9:**

TrackThings incorporates its General Objections as if fully set forth herein. TrackThings further objects to this Interrogatory to the extent that it is overly broad, unduly burdensome, and not proportional to the needs of this case, as well as compound, at least to the extent it asks TrackThings to "[d]escribe in detail the complete legal and factual bases for Your contention, if

Application"), which issued as the '017 Patent. Notably, most of the '017 and '442 Patent specifications are almost identical, including at least the figures and the detailed descriptions of the inventions. The asserted claims of the '442 Patent are supported by the sections of the specification it shares with the '158 Application / '017 Patent.

TrackThings further refers NETGEAR to the Patents-in-Suit (TT-N-0001417-1491) and file histories for the Patents-in-Suit (TT-N-0000001-1416).

Discovery is ongoing and TrackThings reserves the right to amend or supplement its response to this Interrogatory in accordance with the Federal Rules of Civil Procedure and any applicable order of the Court. TrackThings also reserves the right to rely on the testimony of witnesses that are deposed and provide information relevant to this Interrogatory.

Dated: September 14, 2023

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#### /s/ Alexandra M. Joyce

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Attorneys for Plaintiff TrackThings LLC

# EXHIBIT 2

	18459		
	ED STATES DISTR DISTRICT OF DE		Page 1
	000		
TRACKTHINGS	LLC,	)	
	Plaintiff,	) )	
vs.		) Case No. ) 22-981-JLH	
NETGEAR, IN	C.,	)	
	Defendant.	) ) )	
	000		
MONDA	Y, OCTOBER 21,	2024	
ZOOM VIDEOT.	APED DEPOSITION	OF HARRY BIMS, PH	.D.



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REPORTER: BALINDA DUNLAP, CSR 10710, RPR, CRR, RMR



		Page 17
1	different times, because each one was written	
2	sequentially. It wasn't written there wasn't	
3	any overlap in time between them.	
4	Q. And approximately how many hours did you	
5	spend developing the opinions in your three	08:30:52
6	reports?	
7	A. Probably a few hundred hours.	
8	Q. Do you have a more accurate count than	
9	that?	
10	A. I'm not really sure. It's been over the	08:31:14
11	course of a couple years. I didn't double-check my	
12	records before the depo.	
13	Q. Approximately when did you first have	
14	access to any of the documents that you considered	
15	in forming your opinions in the three reports we	08:31:32
16	just discussed?	
17	A. Well, I began working on the three reports	
18	at different times, and the documents I reviewed	
19	for validity only partially overlapped the	
20	documents that I reviewed for infringement. And I	08:31:58
21	think I've kind of listed exactly what I reviewed	
22	in my materials considered list.	
23	Q. Okay. So let's take each of the three	
24	reports. Let's talk about your opening	
25	infringement report.	08:32:15



		Page 18
1	When were you first contacted to work on	
2	that report?	
3	A. So I began thinking about the infringement	
4	report when I was retained roughly a couple years	
5	ago.	08:32:33
6	Q. What do you mean by that?	
7	MR. GERSON: Objection to form.	
8	THE WITNESS: So what I mean by that is	
9	that my opinions on infringement were based on an	
10	analysis that began once I was retained for the	08:32:58
11	case.	
12	Q. BY MS. SONI: What analysis did you	
13	conduct once you were retained for the case with	
14	respect to infringement?	
15	A. So I began reviewing materials in this	08:33:16
16	case such as the the asserted patents. And	
17	there may have been other documents related to	
18	claim construction or infringement contentions.	
19	But there was an ongoing kind of release of	
20	documents for my review that, you know, I analyzed	08:33:46
21	before completing my infringement report.	
22	Q. Okay. When did you first begin working on	
23	your validity rebuttal report?	
24	A. Once I received the first invalidity	
25	report from Dr. Houh, I began forming opinions	08:34:18



		Page 19
1	based on reviewing his report with respect to	
2	validity.	
3	Q. Did you review any invalidity contentions	
4	in this case?	
5	A. I don't remember.	08:34:39
6	Q. Okay. Turning to the last report that you	
7	provided in this case, when did you first begin	
8	working on your reply infringement report?	
9	A. So once I received Dr. Houh's	
10	noninfringement report, I began working on my	08:35:17
11	reply infringement report.	
12	Q. And you mentioned earlier that you listed	
13	what you reviewed the documents and materials	
14	that you reviewed in forming your opinions in your	
15	materials considered list; is that right?	08:35:47
16	A. Yes.	
17	Q. Did you review any documents or materials	
18	in forming your opinions that are not listed in the	
19	materials considered list attached to your three	
20	reports?	08:36:00
21	A. No.	
22	Q. Can you generally describe the process of	
23	drafting your reports without revealing any	
24	communications between you and TrackThings'	
25	attorneys?	08:36:16



		Page 20
1	MR. GERSON: Yeah, and I just I guess	
2	just the same caution to the witness. But you	
3	know, to the extent you can answer this question	
4	without revealing anything that's privileged or	
5	work product, you may reply.	08:36:25
6	THE WITNESS: So generally, I gather	
7	information that has been uncovered during the	
8	discovery process as along with the asserted	
9	patents in this case. And based on that review, I	
10	then begin to form my opinions in the case, which	08:36:53
11	does take some time to iteratively think through	
12	the issues.	
13	And, you know, my opinions, you know,	
14	along the way are documented in draft versions of	
15	my expert report, which then gets revised until the	08:37:15
16	time that I actually sign.	
17	Q. BY MS. SONI: Did you draft your expert	
18	reports?	
19	MR. GERSON: Again, same caution to the	
20	witness about not revealing the attorney-client	08:37:30
21	privilege.	
22	THE WITNESS: Yes. So the draft expert	
23	reports all contained my intermediate opinions that	
24	were part of the analysis I was performing.	
25	Q. BY MS. SONI: Did anyone assist you in	08:37:50



## **EXHIBIT 14B**

NETGEAR'S MIL 2 (including TrackThings'
Opposition and NETGEAR's Reply)

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

NETGEAR, INC.,

Defendant.

C.A. No. 22-981-JLH (CONSOLIDATED)

JURY TRIAL DEMANDED

DEFENDANT NETGEAR, INC.'S MOTION IN LIMINE NO. 2 TO EXCLUDE EVIDENCE, TESTIMONY, OR ARGUMENT REGARDING LICENSING OF MR. GABARA'S UNASSERTED PATENTS

### TABLE OF EXHIBITS<sup>1</sup>

Ex. 1	Excerpted Corrected Transcript of February 19, 2025 Hearing on Dispositive Motions
Ex. 2	Excerpted Deposition Transcript of Thaddeus Gabara's December 19, 2023 Deposition
Ex. 3	Excerpted TrackThings' Supplemental Responses to NETGEAR's Interrogatories, dated January 12, 2024
Ex. 4	Ferring Pharms. v. Finch Therapeutics Grp., C.A. No. 21-1694, D.I. 440 (D. Del. Aug. 1, 2024)
Ex. 5	Takeda Pharm. v. Apotex, C.A. No. 18-88-LPS, D.I. 990 (D. Del. Jan. 7, 2021)
Ex. 6	Excerpted Opening Expert Report of Stephen A. Holzen Regarding Damages, dated January 25, 2024

<sup>&</sup>lt;sup>1</sup> Full version of Ex. 6, Mr. Holzen's Op. Rpt., can be found at D.I. 248 Ex. 21.

NETGEAR moves to preclude TrackThings from presenting any evidence, testimony, or argument regarding supposed licensing of Mr. Gabara's unasserted patents. Fed. R. Evid. 401-403; Fed. R. Civ. P. 26, 37. TrackThings provided NETGEAR no information about these supposed licenses. Allowing new evidence at trial about Mr. Gabara's supposed patent licenses is highly prejudicial, irrelevant, and would mislead the jury, confuse the issues, and waste time.

TrackThings has presented unsupported attorney argument regarding Mr. Gabara's supposed licenses, and it appears TrackThings intends to present such arguments at trial. During the dispositive motion hearing in February 2025, TrackThings' counsel introduced Mr. Gabara as "the inventor of the three patents-in-suit here, a 20-year veteran of AT&T Bell Labs[,]" whose "patents have been licensed across the industry." (*See* Ex. 1 at 18:13-18 (emphasis added).) Then, during the parties' March 27, 2025 meet and confer, TrackThings indicated that Mr. Gabara's licenses were relevant to damages and to Mr. Gabara's background.

Despite TrackThings' attorney assertions about these supposed licenses, TrackThings only put NETGEAR on notice of any such licensing of Mr. Gabara's patents during dispositive motions, almost a year after the close of fact discovery. (D.I. 269 (TrackThings' Resp. Brief) at 1; D.I. 184 (close of fact discovery: Dec. 22, 2023).) TrackThings still has neither produced nor identified any licenses in this case, and no fact or expert witness identified any licenses granted by either TrackThings or Mr. Gabara. To the contrary,

and TrackThings' Interrogatory Response on licenses identifies only NETGEAR licenses. (Ex. 2 at 99:14-17 ("

"), 310:3-5; Ex. 3 at 195 (response to Interrogatory No. 11).) Allowing TrackThings to point to unproduced licenses of unasserted patents (to the extent such licenses even exist) would be prejudicial, irrelevant, and misleading.

## A. Allowing TrackThings to Introduce Information Regarding Mr. Gabara's Licenses to the Jury Would Be Highly Prejudicial to NETGEAR

Allowing information about Mr. Gabara's licenses to come in for the first time at trial would be highly prejudicial to NETGEAR and should not be permitted. There is no evidence in the record corroborating TrackThings' attorney argument about supposed licenses. It would be prejudicial to permit such arguments for which there is zero supporting evidence, and which were kept from NETGEAR during discovery. If TrackThings attempted to introduce supporting evidence of licenses for the first time at trial, that would also be highly prejudicial. It is too late in the case for such untimely disclosure. Fed. R. Civ. P. 26(a)(1), 37(c)(1); (Ex. 4, Ferring Pharms. v. Finch Therapeutics Grp., C.A. No. 21-1694, D.I. 440 (D. Del. Aug. 1, 2024) (precluding untimely disclosed evidence)). Late disclosure severely prejudices NETGEAR's ability to fairly defend itself at trial, since NETGEAR was not afforded the benefit of prior review and analysis of the supposed licenses and was deprived the fair opportunity to inquire about them during deposition, offer competing evidence, provide expert analysis, or address the supposed licenses during prior motion practice. (Ex. 5, Takeda Pharm. v. Apotex, C.A. No. 18-88-LPS, D.I. 990 at 1 (D. Del. Jan. 7, 2021) (it would be "substantially and unfairly prejudicial" to permit witness to identify evidence for the first time at trial).) Additionally, as described below, Mr. Gabara's supposed licenses are not relevant. Allowing their use in trial may lead the jury to give undue weight to unrelated licenses and potentially interpret Mr. Gabara's supposed ability to license patents as a reason to assign a higher value to the asserted '442 patent here.

## B. Mr. Gabara's Licenses of Unasserted Patents Are Irrelevant and It Would Be Misleading, Confusing, and a Waste of Time to Allow Them In

Mr. Gabara's licenses are irrelevant and inadmissible under Rules 401 and 402 because: (1) Mr. Gabara is not a party to the litigation—the only parties are TrackThings and NETGEAR; and (2) the supposed licenses apparently involve patents TrackThings did not assert in this

litigation—only the '442 patent is asserted and (like all TrackThings' patents)

(Ex. 2 at 97:24-99:17, 310:3-5). *C.f. Bio-Rad Lab'ys v. 10X Genomics*, 2018 WL 6629705, at \*1 (D. Del. Oct. 12, 2018) (excluding evidence involving unrelated patents and issues). TrackThings' argument that the supposed licenses are relevant to damages is meritless, as TrackThings' damages expert expressly did <u>not</u> rely on any such licenses. (Ex. 6 at ¶ 171 ("I am not aware of any patent license agreements or transactions that are sufficiently technically or economically comparable to the transaction contemplated at the hypothetical negotiations to offer a meaningful indication as to the value of the Patents-in-Suit."); *see also id.* at ¶¶ 112-120, 168-171 (identifying no Gabara licenses for *Georgia-Pacific* factors relating to licensing).) Nor could TrackThings rely on such licenses for damages now, since it produced no evidence regarding the licenses. *Cf. CoreLogic Info. Sols. v. Fiserv*, 2012 WL 4761739, at \*2 (E.D. Tex. Sept. 20, 2012) (a party cannot introduce royalty until comparability of license at issue has been established). Other arguments for "relevance" of the licenses likewise fail—that the licenses never came up before dispositive motions is evidence of their irrelevance.

Furthermore, Mr. Gabara's licenses are inadmissible under Rule 403 because, to the extent the licenses have any probative value at all, it is substantially outweighed by the risk of confusing the issues, misleading the jury, and wasting time by presenting evidence of little or no value. Again, Mr. Gabara is a non-party, the licenses (if they even exist) have to do with unasserted patents, and the licenses have not been shown to be relevant for damages or any other aspect of the case. Presenting such evidence would confuse the jury and may lead the jury to search for relevance where relevance does not exist.

NETGEAR thus requests that the Court preclude TrackThings from presenting evidence, testimony, or argument regarding licensing of Mr. Gabara's patents not asserted in this case.

Dated: April 1, 2025 Respectfully submitted,

/s/ James L. Higgins

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### **CERTIFICATION**

Pursuant to Local Rule 7.1.1, the undersigned counsel hereby certifies that a reasonable effort was made to reach agreement regarding the subject of the foregoing motion but that agreement could not be reached.

/s/ James L. Higgins
James L. Higgins (No. 5021)

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	C A N. 22 001 H H	
Plaintiff,	C.A. No. 22-981-JLH (CONSOLIDATED)	
v.	JURY TRIAL DEMANDED	
NETGEAR, INC.,		
Defendant.		
[PROPOSEI	O] ORDER	
At Wilmington, this day of _	, 2025, having considered Defendant	
NETGEAR, Inc.'s ("NETGEAR") Motion in Lin	nine No. 2 to Exclude Evidence, Testimony, or	
Argument Regarding Licensing of Mr. Gabara	's Unasserted Patents and any pleadings and	
arguments in connection therewith;		
IT IS HEREBY ORDERED that NET	TGEAR's Motion is GRANTED. Plaintiff	
TrackThings, LLC is PRECLUDED from offering	ng evidence, testimony, or argument regarding	

The Honorable Jennifer L. Hall United States District Judge

licensing of Mr. Thaddeus Gabara's unasserted patents.

# EXHIBIT 1

Case 1:2	2-cv-00981-JLH Document 397 Filed 07/29/25 Page 884 of 954 PageID #: 18474 1
1	IN THE UNITED STATES DISTRICT COURT
2	FOR THE DISTRICT OF DELAWARE
3	
4	TRACKTHINGS LLC,
5	Plaintiff, )
6	) C.A. No. 22-981-JLH v. ) (Consolidated)
7	NETGEAR, INC.,
8	Defendant. )
9	J. Caleb Boggs Courthouse
10	844 North King Street Wilmington, Delaware
11	Wednesday, February 19, 2025
12	1:04 p.m. Summary Judgment and
13	Daubert Hearing
14	BEFORE: THE HONORABLE JENNIFER L. HALL, U.S.D.C.J.
15	
16	APPEARANCES:
17	McCARTER & ENGLISH, LLP BY: DANIEL M. SILVER, ESQUIRE
18	-and-
19	SCHULTE ROTH & ZABEL LLP
20	BY: TIMOTHY K. GILMAN, ESQUIRE BY: AMANDA SEWANAN, ESQUIRE
21	BY: PRIYADARSHINI DAS, ESQUIRE
22	For the Plaintiff
23 24	
25	
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1	APPEARANCES CONTINUED:
2	YOUNG CONAWAY STARGATT & TAYLOR LLP
3	BY: JAMES HIGGINS, ESQUIRE
4	-and-
5	COOLEY LLP BY: REUBEN CHEN, ESQUIRE
6	BY: EAMONN GARDNER, ESQUIRE BY: HANBYUL CHANG, ESQUIRE BY: ANGELA MADRIGAL, ESQUIRE
7 12:32:14 12:32:14 8 12:32:14	For the Defendant
12:32:14 9	*** PROCEEDINGS ***
12:59:29 10	
12:59:29 11	DEPUTY CLERK: All rise. Court is now in
01:04:40 12	session. The Honorable Jennifer L. Hall presiding.
01:04:44 13	THE COURT: Hi. Please be seated.
01:04:46 14	We're here today to hear some summary judgment
01:04:49 15	motions and a Daubert motion in a case called <i>TrackThings</i>
01:04:52 16	vs. NETGEAR. It's Civil Action Number 22-981.
01:04:56 17	Let's go ahead and put our appearances on the
01:04:58 18	record.
01:05:00 19	MR. SILVER: Good afternoon, Your Honor. Dan
01:05:03 20	Silver from McCarter & English on behalf of TrackThings.
01:05:0521	And I'm joined today by Timothy Gilman, Amanda Sewanan and
01:05:11 22	Priya Das from the Schulte Roth & Zabel firm in New York.
01:05:14 23	THE COURT: Great. Thank you.
01:05:15 24	MR. SILVER: You're welcome.
01:05:17 25	MR. HIGGINS: Good afternoon, Your Honor.

01:27:17 1 01:27:21 2 01:27:22 3 01:27:28 4 01:27:31 5 01:27:35 6 01:27:37 7 01:27:40 8 01:27:42 9 01:27:45 10 01:27:49 11 01:27:53 12 01:27:55 13 01:27:58 14 01:28:02 15 01:28:06 16 01:28:10 17 01:28:16 18 01:28:20 19 01:28:24 20 01:28:2621 01:28:29 22 01:28:30 23

01:28:34 24

01:28:37 25

that broader claim construction. That decision was affirmed by the Federal Circuit.

So let me talk about the node assignment. So what TrackThings would like to do here is essentially expand node assignment so that it's not based on what's disclosed in the specification, which is verbal command, voice recognition, sound tracking, intermechanical switch.

Instead, for its infringement read, even though this is nowhere discussed in the specification, they want to be able to read this claim language onto adding a relay or moving a relay by the addition of a relay or moving a relay somewhere else that there's going to be a new node assignment. But there's no description of that in the specification at all. And because of the *Liebel-Flarsheim* decision, we believe Your Honor should find that there's no 112 support for that broad construction.

The second argument is that the node assignment, they argued, doesn't have to be limited to the master node sending that node assignment, that it could also include, for example, the slave node. And, again, they're trying to do this for a broader infringement read, but there's no discussion of that in the specification.

In fact, Your Honor forecasted this Section 112 issue in your Markman order when you noted that the specification is similarly unhelpful. That example doesn't

01:28:41 1 clarify whether the assignment is achieved through a 01:28:44 2 mechanism other than communication by a master node to all other nodes. 01:28:48 3 So, again, like the Liebel-Flarsheim decision, 01:28:49 4 TrackThings succeeded in obtaining its broad construction at 01:28:53 5 Markman. But given that broad construction, this claim 01:28:57 6 01:29:00 7 limitation now lacks Section 112 support. And as a result, the '893 patent is invalid for these additional reasons. 01:29:03 8 01:29:05 9 And with that, unless Your Honor has any 01:29:08 10 questions, I'll just reserve some time for rebuttal. THE COURT: That's fine. Thank you. 01:29:12 11 01:29:14 12 MR. CHEN: Thank you. MR. GILMAN: May it please the Court. Timothy 01:29:25 13 Gilman from Schulte on behalf of TrackThings. 01:29:45 14 01:29:46 15 That is Mr. Gabara, the inventor of the three 01:29:50 16 patents-in-suit here, a 20-year veteran of AT&T Bell Labs. He worked on Wi-Fi networks before the term "Wi-Fi" was even 01:29:55 17 01:29:58 18 coined. His patents have been licensed across the industry. 01:30:03 19 That's important because all three of the 01:30:04 20 patents here relate to improving computer networks. And I'll discuss each of the three patents in turn. But that's 01:30:0921 01:30:11 22 an important distinction that's been recognized throughout 01:30:14 23 the Federal Circuit's jurisprudence here, that if you're 01:30:17 24 improving a computer network itself, you're within 101 subject matter eligibility. And cases like DDR, or Mentone 01:30:22 25

01:30:25 1 01:30:29 2 01:30:31 3 01:30:36 4 01:30:39 5 01:30:43 6 01:30:46 7 01:30:49 8 01:30:52 9 01:30:53 10 01:30:55 11 01:31:02 12 01:31:05 13 01:31:07 14 01:31:10 15 01:31:13 16 01:31:16 17 01:31:20 18 01:31:23 19 01:31:24 20 01:31:2621

01:31:29 22

01:31:32 23

01:31:35 24

01:31:40 25

or Cooperative Entertainment, versus if you're using a computer network to do a business purpose or some other purpose like Electric Power Group, or Two-Way Media or ChargePoint where you're using established networking technology to do something like monitoring electric power grids or monitoring charge points for electric vehicles. If you're actually improving the network, that's Section 101 patent eligible if it's a specific improvement to the network.

Relatedly, the Federal Circuit has been clear that software innovations are 101 eligible. Cases like Enfish, Ancora, or Mentone. And this is why the way that it's been presented by Defendants I don't think is relevant to the inquiry here, because it's not a question of: Are you using known components or not? That's not the test.

It's you can have software-only innovations, things that use all known components, but are you improving computer technology? Are you improving computer network technology is the relevant inquiry here.

The Mentone case from the Federal Circuit, I think, is particularly instructive. There were no new components at all in those claims. It was a scheme for monitoring and assigning channels and bandwidth in a network to improve the network. And that's enough for 101 if you're actually improving the network through an innovation.

# EXHIBIT 2

	Page 1
1	IN THE UNITED STATES DISTRICT COURT
	FOR THE DISTRICT OF DELAWARE YORK
2	X
	TRACKTHINGS LLC,
3	
	Plaintiff,
4	
	-vs- C.A. No.: 22-98-RGA-JLH
5	(Consolidated)
	NETGEAR, INC.,
6	
	DEFENDANT.
7	X
8	
9	DECEMBER 19, 2023
10	10:30 A.M.
11	
12	
13	
14	VIDEO DEPOSITION of THADDEUS GABARA,
15	individually and on behalf of TRACKTHINGS LLC ,
16	taken by the Defendant pursuant to Notice and
17	to the Federal Rules of Civil Procedure, held
18	at the offices of Schulte Roth & Zabel LLP,
19	919 Third Avenue, New York, New York, before
20	Marianne Witkowski-Smith, a Shorthand Reporter
21	and Notary Public of the State of New York.
22	
23	
24	

	Page 2
1	APPEARANCES:
2	
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10	
11	ALSO PRESENT:
	TOM DEVINE, Legal Videographer
12	
13	
14	* * * *
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### T. GABARA

	Page 311
1	Q. When did you make the website?
2	A. I don't remember.
3	Q. Okay.
4	A. But I don't think it was in fact in
5	2013. I may be mistaken.
6	Q. Okay. Do you think it was later
7	than 2013?
8	A. Yeah, I don't think I had the
9	website then.
10	Q. Okay. When do you think you had the
11	website?
12	A. I'm not sure, but it might have been
13	2017/2018.
14	MS. SONI: Okay. Let's mark as
15	Gabara Exhibit 24? This a printout
16	from the TrackThings website from the
17	internet archive. This is a printout from
18	the website on March 11, 2022.
19	(Whereupon, Gabara Exhibit 24,
20	TrackThings Website Printout, was marked
21	for identification, as of this date.)
22	Q. Do you recognize this as a printout
23	of the TrackThings website?
24	A. Yes, I do.

# EXHIBIT 3

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

C.A. No.: 22-981-RGA-JLH (CONSOLIDATED)

v.

JURY TRIAL DEMANDED

NETGEAR, INC.,

Defendant.

# PLAINTIFF TRACKTHINGS' SECOND SUPPLEMENTAL RESPONSES AND OBJECTIONS TO NETGEAR, INC.'S INTERROGATORY NOS. 11, 14, 21 AND THIRD SUPPLEMENTAL RESPONSES AND OBJECTIONS TO NETGEAR, INC.'S INTERROGATORY NO. 24

Pursuant to Federal Rules of Civil Procedure 26 and 33, Plaintiff TrackThings LLC, ("Plaintiff" or "TrackThings"), by its undersigned counsel, hereby submits these objections and responses to Defendant NETGEAR, Inc.'s ("Defendant" or "NETGEAR") First Set of Interrogatories (Nos. 1-14), dated August 15, 2023, and Second Set of Interrogatories (Nos. 15-25), dated October 11, 2023 (the "Interrogatories" and, individually, each an "Interrogatory").

#### **GENERAL OBJECTIONS**

The following General Objections apply to each of the Interrogatories propounded by NETGEAR and, unless otherwise stated, shall have the same force and effect as if set forth in full in response to each of the separately numbered Interrogatories. Although certain of these General Objections may be specifically referred to in response to certain specific Interrogatories, failure to mention those General Objections in response to other Interrogatories shall not be construed as a waiver of those General Objections as to those other Interrogatories. An assertion of the same,

pursuant to Federal Rule of Civil Procedure 33(d), TrackThings identifies the following documents from which responsive information may be obtained: TT-N-0073625 - TT-N-0073750.

Discovery is ongoing and TrackThings reserves the right to amend or supplement its response to this Interrogatory in accordance with the Federal Rules of Civil Procedure and any applicable order of the Court. TrackThings also reserves the right to rely on the testimony of witnesses that are deposed and provide information relevant to this Interrogatory.

#### **SECOND SUPPLEMENTAL RESPONSE NO. 10:**

TrackThings incorporates fully its Objections and Responses to Interrogatory No. 10 as set forth above, in TrackThings' Objections and Responses to NETGEAR's First Set of Interrogatories, dated September 14, 2023, and TrackThings' Supplemental Objections and Responses to NETGEAR's Interrogatory Nos. 1, 6, and 10, dated October 31, 2023. Subject to, and without waiving the foregoing objections, TrackThings further responds to this Interrogatory as follows: Pursuant to Federal Rule of Civil Procedure 33(d), TrackThings identifies the following documents from which responsive information may be obtained: TT-N-0070856, TT-N-0071253 - TT-N-71395. As explained above in the Supplemental Response to Interrogatory No. 10, TrackThings does not maintain financial records of the type sought therein apart from banking records.

#### **INTERROGATORY NO. 11:**

Describe in detail, including by narrative, the complete factual and legal bases for Your contention(s) regarding any damages sought in this suit from NETGEAR, including the form(s) of damages sought, the amount sought, the complete bases and theories for Your damages claim(s), any features You contend drive demand for the NETGEAR products You accuse of infringement in this suit, any purportedly comparable license agreements, any alleged competition between Plaintiff and NETGEAR, all facts and evidence relevant to each of the factors identified in Georgia-Pacific v. United States Plywood, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970), a complete description of the hypothetical negotiation as contemplated by Georgia-Pacific for each Asserted Patent and/or NETGEAR

product You accuse of infringement in this suit (including without limitation all applicable date(s) of hypothetical negotiation and all relevant facts and circumstances), and an identification of all related Documents.

### **RESPONSE NO. 11:**

TrackThings incorporates its General Objections as if fully set forth herein. TrackThings further objects to this Interrogatory as premature, especially in view of NETGEAR not having provided relevant discovery for TrackThings to calculate with specificity the full extent of its damages. TrackThings further objects to this Interrogatory as improperly requesting expert discovery to the extent it calls for TrackThings' damages contentions at this stage of this proceeding before the date for expert reports set forth in the Court's Scheduling Order.

TrackThings further objects to this Interrogatory to the extent that it seeks information that is protected from disclosure by the attorney-client privilege, the attorney work product doctrine or any other applicable privilege, doctrine, or discovery immunity. The inadvertent production by TrackThings of information protected from disclosure by any such privilege, doctrine, or immunity shall not be deemed a waiver by TrackThings of any such privileges or protections. TrackThings further objects to the extent this Interrogatory calls for information in the possession of third parties, including NETGEAR itself, and further to the extent NETGEAR has failed to provide discovery requested by TrackThings. TrackThings further objects to the extent this Interrogatory calls for legal conclusions and contentions.

Subject to, and without waiving, the foregoing objections, TrackThings responds to this Interrogatory as follows: Information responsive to this Interrogatory will be provided in the forthcoming expert reports of TrackThings' damages expert under the schedule set forth in the Court's Scheduling Order, any supplemental expert reports by such expert on the damages issues, and any testimony (by declaration, in deposition, or at trial) to be provided in this case by TrackThings' expert(s), all of which TrackThings incorporates by reference herein.

Discovery is ongoing and TrackThings reserves the right to amend or supplement its response to this Interrogatory in accordance with the Federal Rules of Civil Procedure and any applicable order of the Court. TrackThings also reserves the right to rely on the testimony of witnesses that are deposed and provide information relevant to this Interrogatory.

#### **SUPPLEMENTAL RESPONSE NO. 11:**

TrackThings incorporates fully its Responses and Specific Objections to Interrogatory No.

11 as set forth above, in TrackThings' Objections and Responses to NETGEAR's First Set of Interrogatories, dated September 14, 2023. Subject to, and without waiving the foregoing objections, TrackThings further responds to this Interrogatory as follows:

TrackThings is entitled to the minimum of a reasonable royalty, plus interests and costs, for past infringements pursuant to 35 U.S.C. § 284. TrackThings is also entitled to its reasonable attorneys' fees and a trebling of any damages for NETGEAR's willful infringement pursuant to 35 U.S.C. §§ 284 and 285. Section 284 requires that the court award damages "adequate to compensate for the infringement" that is "in no event less than a reasonable royalty for the use made of the invention by the infringer." A reasonable royalty is the amount that two willing parties would have agreed to in a hypothetical negotiation for the use of a licensor's technology at the time of first infringement. The construct of a hypothetical negotiation between a "willing licensor" (the patent owner/licensor) and a "willing licensee" (the infringer) at the time the infringement began may be used to establish reasonable royalty damages. *Georgia-Pacific Corp. v. U.S. Plywood Corp.*, 318 F. Supp. 1116 (S.D.N.Y. 1970), *judgment modified*, 446 F.2d 295 (2d Cir. 1971).

With respect to the reasonable royalty calculation, upon present information and belief, the date of the hypothetical negotiation(s) would be the date of first infringement, and the parties to

the hypothetical negotiation(s) would be TrackThings and NETGEAR. The date of first infringement for each of the Patents-in-Suit may range between May 3, 2016 (the date the '442 Patent was issued), May 2, 2017 (the date the '017 Patent issued) to October 23, 2018 (the date that the '893 Patent issued). At this time, the date of first sale for each of the Accused Products has not been provided by NETGEAR. Therefore, it is unknown whether there would be one hypothetical negotiation for all of the Patents-in-Suit with respect to each of the Accused Products, or whether there would be multiple hypothetical negotiations for certain of the Patents-in-Suit with respect to certain of the Accused Products. The determination of a reasonable royalty involves the valuation of intangible assets and determining what a user would pay and a buyer would accept for the right to use the assets.

There are the three standard quantitative valuation methods referred to as the Income, Market, and Cost Approaches often used in the determination of a reasonable royalty. The Income Approach values intangible assets based on expectations of economic income or profit that may be generated by use or ownership of the subject property. The Market Approach values assets based on comparable transactions between unrelated parties. The Cost Approach considers out-of-pocket expenditures as well as risks, lost sales, and other adverse economic impacts connected with the alternative non-infringing technology. *See generally* Reilly & Schweihs, Valuing Intangible Assets (1999), TT-N-0033634.

Presently, and without limitation to further supplementation as discovery progresses, TrackThings may evaluate the three standard quantitative valuation methods as part of the determination of a reasonable royalty. TrackThings may also apply the quantitative approach of comparing the price and profitability of the accused infringing smallest saleable unit to similar conventional, non-infringing products as part of the Analytical Approach.

The methodology for determining a reasonably royalty will also likely involve an application of the factors as laid out in *Georgia-Pacific*, 318 F. Supp. at 1120. Presently, and without limitation to further supplementation as discovery progresses, TrackThings will analyze the following factors and apply the appropriate weight to each factor based on the relevance to the respective bargaining positions of TrackThings and NETGEAR as part of the hypothetical negotiation(s):

- NETGEAR's licenses for comparable technology to the Patents-in-Suit, including amounts
  paid, scope, and nature of the license, to the extent such licenses exists;
- the non-exclusive nature of the license sought by TrackThings for the Patents-in-Suit;
- the inventor/promoter relationship between TrackThings and NETGEAR;
- the impact that the Accused Products have had on NETGEAR's other products and services in addition to the Accused Products, and to NETGEAR's overall revenue and profit;
- the duration of the hypothetical license(s) to the Patents-in-Suit;
- the past and current popularity of and demand for the Accused Products, as well as the Accused Products' commercial success;
- the utility and advantages of the Patents-in-Suit, especially as compared to any alleged non-infringing alternatives, and the resulting benefits of the Accused Products;
- the extent of the NETGEAR's use of the Patents-in-Suit as a part of the Accused Products, including evidence regarding the value of that use;
- the portion of the profit or of the selling price that may be customary in the industry to allow for the use of Patents-in-Suit or similar technologies; and

• the portion of NETGEAR's profits that should be credited to the Patents-in-Suit compared to the non-patented elements, as well as the development process, business risks, or significant features or improvements added by NETGEAR, if any.

TrackThings expects that a financial expert will perform an apportionment calculation to value only the benefit provided by the Patents-in-Suit to the Accused Products. TrackThings anticipates that revenue, cost, profit, and other financial or performance measures for NETGEAR's Accused Products will be analyzed, including through the infringement period, or for the period in which data is made available by NETGEAR. As a part of this analysis, TrackThings may evaluate the "ecosystem" impact that NETGEAR's use of the Patents-in-Suit may have had on NETGEAR's overall financial performance and on the technical and financial performance on other products and services sold alongside or to be used with the Accused Products. For example, it is currently contemplated that TrackThings will pursue a convoyed/derivative sales theory, including but not limited to sales of NETGEAR Armor, NETGEAR ProSupport, NETGEAR Smart Parental Controls, and similar subscription offerings by NETGEAR.

TrackThings may rely on at least the following documents as a part of its analysis: NETGEAR-TRACK-009760, NETGEAR-TRACK-009862, NETGEAR-TRACK-009987, NETGEAR-TRACK-009988, NETGEAR-TRACK-011070, NETGEAR-TRACK-009761, NETGEAR-TRACK-009832, NETGEAR-TRACK-009847, NETGEAR-TRACK-009863, NETGEAR-TRACK-009864, NETGEAR-TRACK-009865, NETGEAR-TRACK-009886, NETGEAR-TRACK-009887, NETGEAR-TRACK-009931, NETGEAR-TRACK-009960, NETGEAR-TRACK-009961, NETGEAR-TRACK-009962, NETGEAR-TRACK-009963, NETGEAR-TRACK-009964, NETGEAR-TRACK-009965, NETGEAR-TRACK-009966, NETGEAR-TRACK-009985, NETGEAR-TRACK-009986, NETGEAR-TRACK-010003, NETGEAR-TRACK-006326-9356, NETGEAR-TRACK-009357-9759, TT-N-0009041-10051, TT-N-0013516-13630, TT-N-0081926-82645, TT-N-0006677-8645, TT-N-0008839-8965, TT-N-0024283-25967, TT-N-0089257-89278, TT-N-0089502-91067, and TT-N-0026029-26243. TrackThings also incorporates herein by reference its objections and responses to Interrogatory No. 8, from which additional responsive information may be ascertained.

TrackThings also anticipates relying upon the deposition transcripts of witnesses offering testimony on behalf of each party, along with the exhibits used therein. TrackThings may also rely on documents and/or information produced by either party in this case and/or other information uncovered through its expert's own investigations and analyses, such as publicly available information.

The documents identified in response to this Interrogatory are exemplary and TrackThings reserves the right to rely on other documents in TrackThings' or NETGEAR's production—or in NETGEAR's possession but not yet produced—that support TrackThings' damages. Moreover, TrackThings reserves the right to supplement its response, especially in view of ongoing fact discovery. Information responsive to this Interrogatory will be provided in TrackThings' forthcoming expert reports of its damages expert pursuant to the schedule set forth in the Court's Scheduling Order, as amended, any supplemental expert reports by such expert on the damages issues, and any testimony (by declaration, in deposition, or at trial) to be provided in this case by TrackThings' expert(s), all of which TrackThings incorporates by reference herein.

#### **SECOND SUPPLEMENTAL RESPONSE NO. 11:**

TrackThings incorporates fully its Responses and Specific Objections to Interrogatory No. 21 as set forth above, in TrackThings' First Supplemental Responses and Objections to NETGEAR's Interrogatory Nos. 8-9, 11-12, 15, 19, 21, 24-25 and Second Supplemental

Responses and Objections to Interrogatory No. 10, dated December 1, 2023. Subject to, and without waiving the foregoing objections, TrackThings further responds to this Interrogatory as follows:

As part of its analysis, TrackThings may rely on at least the testimony from the depositions of Sandeep Harpalani, Aaron Johnson, Ravindra Bhilave, Joseph Emmanuel, Steve Gielty, Anna Lam, and Thaddeus Gabara, and the exhibits thereto. Additionally, as a part of its analysis, TrackThings may rely on at least the documents in the following Bates ranges: TT-N-0090641 – TT-N-0090675; TT-N-0090806 – TT-N-0090878; TT-N-0091045 – TT-N-0091051; TT-N-0091054 – TT-N-0091067; TT-N-0092407 – TT-N-0092409; TT-N-0092415 – TT-N-0092417; TT-N-0092528 – TT-N-0092827; TT-N-0092945 – TT-N-0093045; TT-N-0093261 – TT-N-0093267; TT-N-0093279 – TT-N-0093285; TT-N-0093321 – TT-N-0093323; TT-N-0093333 – TT-N-0093359; TT-N-0093369 – TT-N-0093375; TT-N-0093384 – TT-N-0093424; TT-N-0093429 – TT-N-0093470; TT-N-0093488 – TT-N-0093535.

The documents identified in response to this Interrogatory are exemplary and TrackThings reserves the right to rely on other documents including those in TrackThings' or NETGEAR's production—or in NETGEAR's possession but not yet produced—that support TrackThings' damages contentions. Moreover, TrackThings reserves the right to supplement its response. Information responsive to this Interrogatory will be provided in TrackThings' forthcoming expert reports of its damages expert pursuant to the schedule set forth in the Court's Scheduling Order, as amended, any supplemental expert reports by such expert on the damages issues, and any testimony (by declaration, in deposition, or at trial) to be provided in this case by TrackThings' expert(s), all of which TrackThings incorporates by reference herein.

## EXHIBIT 4

ORAL ORDER: This is the Court's ruling on the portion of Finch's MIL No. 5 that requests the exclusion of TX-3453 and TX-3581, which were produced by Ferring's counsel on June 5, 2024. (See D.I. 401.) Having considered the testimony and arguments at the July 31, 2024 hearing and the July 23, 2024 pretrial conference, the Court finds that Ferring's counsel had access to and possession of these two documents well before they were produced to Finch, and counsel offered no persuasive explanation as to why they weren't disclosed earlier; the failure to produce these particular documents earlier prejudices Finch in a way that cannot be remedied at this late stage; the documents are excludable under FRCP 37(c) and Meyers v. Pennypack Woods Home Ownership Ass'n, 559 F.2d 894, 904-05 (3d Cir. 1977); and, even if they weren't excluded, the documents would be inadmissible under FRE 403. Accordingly, IT IS ORDERED that Finch's MIL No. 5 (D.I. 377, Ex. 17.5) is GRANTED insofar as it requests exclusion of TX-3453 and TX-3581. Moreover, as discussed extensively with the parties at the hearing on July 31, 2024, the Court has taken under advisement and is actively considering whether some or all of the testimony of Dr. Borody should be excluded pursuant to one or more of the following: the Court's inherent power to manage its own affairs so as to achieve the orderly and expeditious disposition of cases and protect the integrity of the proceedings; the Court's inherent power to sanction bad faith litigation conduct; the Court's inherent power to address violations of Delaware Rules of Professional Conduct 3.3, 3.4, and 4.1; the Court's inherent power to exclude fact witnesses as a sanction for the wrongful payment of fact witnesses, see, e.g., Rocheux Int'l of New Jersey v. U.S. Merchants Fin. Grp., Inc., No. 06-6147, 2009 WL 3246837, at \*4 (D.N.J. Oct. 5, 2009); the Federal Rules of Evidence (including but not limited to FRE 402, 403, 701, and 802); and the Court's case management orders and the Federal Rules of Civil Procedure (including but not limited to FRCP 16, 26, and 37). In light of the fact that jury selection begins tomorrow and this issue has taken up--and actively continues to take up--a significant amount of the Court's time and resources. IT IS ORDERED that counsel for Ferring shall confirm by letter to the Court by 6:00 p.m. today that it will be calling Dr. Borody as a witness if permitted to do so. Ordered by Judge Jennifer L. Hall on 8/1/2024. (JLH) (Entered: 08/01/2024)

As of August 2, 2024, PACER did not contain a publicly available document associated with this docket entry. The text of the docket entry is shown above.

Ferring Pharmaceuticals Inc. et al v. Finch Therapeutics Group, Inc. et al 1-21-cv-01694 (DDE), 8/1/2024, docket entry 440

## EXHIBIT 5

### IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICTOF DELAWARE

H. LUNDBECK A/S, TAKEDA PHARMACEUTICAL COMPANY LTD., TAKEDA PHARMACEUTICALS U.S.A., INC., TAKEDA PHARMACEUTICALS INTERNATIONAL AG and TAKEDA PHARMACEUTICALS AMERICA, INC.,

Plaintiffs,

v. : C.A. No. 18-88-LPS : CONSOLIDATED

APOTEX INC., et al.,

Defendants.

### **MEMORANDUM ORDER**

At Wilmington this 7<sup>th</sup> day of January, 2021:

Having reviewed the proposed pretrial order ("PTO") submitted by Plaintiffs and Defendants (D.I. 985, 985-1, 986-1, 987-1, 988-1), IT IS HEREBY ORDERED that:

1. Plaintiffs' motion *in limine* ("MIL") No. 1, to exclude obviousness theories (from Defendants Zydus and Sigmapharm, relating to claims of the '884 and '279 patents) based on undisclosed lead compounds, is DENIED. Plaintiffs have not met their burden to show that this evidence and opinion should be excluded. While Defendants' expert, Dr. Lepore, will not be permitted to identify lead compounds "for the first time at trial," as that would be substantially and unfairly prejudicial to Plaintiffs, he will be permitted to opine on any lead compound and "lead motif" he identified as a lead compound in his expert reports and/or deposition. To the

extent there is a dispute as to the legal sufficiency of a theory based on a "lead motif," the Court will evaluate that issue post-trial based on a full record.

- 2. Plaintiffs' MIL No. 2, to exclude "a new argument" that asserted claims of some of the patents-in-suit would have been obvious over PCT Publication No. WO 2003/029232 A1 ("WO '232") "because a POSA would have screened all 24 preferred compounds listed in WO '232," is DENIED. By Plaintiffs' own telling, they have not been recently surprised by the "new" argument. Instead, Plaintiffs acknowledge "Defendants planted the seeds of this new theory in the Reply Report of their expert" and later "during depositions, multiple Defendant experts offered this new theory of how WO '232 purportedly renders the claims of Plaintiffs' patents obvious." (D.I. 988-1 at p. 196 of 857)<sup>1</sup> Plaintiffs have failed to show that the *Pennypack* factors favor exclusion. In particular, Plaintiffs have not persuaded the Court that its decision today will unfairly prejudice Plaintiffs in the manner or to the degree that concerned the Court when it granted an earlier defense motion (a decision which was supported by the *Pennypack* factors). (*See* D.I. 801)
- 3. The parties shall be prepared to discuss at tomorrow's pretrial conference ("PTC") the following issues raised in the PTO:
- A. whether the Court should compel any party to include more "disputed facts" as "undisputed facts" (see PTO ¶¶ 15-16);

<sup>&</sup>lt;sup>1</sup> Defendants' contentions that these theories were adequately disclosed in opening reports, and that Dr. Myerson's responsive report proves this point (*see* D.I. 988-1 at p. 709 of 857), are unpersuasive. While disclosure of a truly "new" theory of invalidity in a reply report and/or a deposition will not always be acceptable, in the context of this case the applicable *Pennypack* factors considered in combination do not warrant exclusion of the challenged evidence and opinion.

- B. whether there is a dispute as to whether fact witnesses should be sequestered prior to their testimony (PTO  $\P$  24);
- C. the parties' positions on how they will make motions for judgment on partial findings under Rule 52(c) (PTO ¶ 103);
- D. the procedure for closing the virtual courtroom for testimony that contains Competitively Sensitive Confidential evidence (PTO ¶ 105); and
- E. whether the Court should require Defendants to provide "clarity regarding which invalidity defenses Defendants actually plan to pursue at trial" and whether Plaintiffs will be reducing the number of asserted claims and/or patents (PTO ¶ 106).
- 4. With respect to Defendants' objection in PTO ¶ 39, the parties are directed that should they be unable to resolve objections with respect to any intended use of any deposition testimony, that objection shall be raised and argued consistent with the procedures set out in the PTO for resolution of deposition objections (*see id.*  $\P$ ¶ 40-44).
- 5. With respect to the dispute in PTO  $\P$  55, the Court adopts Defendants' proposal, meaning that exhibits may be used on cross-examination (even for non-impeachment purposes) without necessarily having been listed in the pretrial order.
- 6. All objections to admissibility of exhibits and expected use of demonstrative exhibits that the parties are unable to resolve without judicial intervention must be raised with the Court at the beginning of the trial day on which it is anticipated that the exhibit is to be used. Failure to comply with this Order will result in waiver of the objection. A party will be charged for all time it spends arguing for or against such objections and for half of the time the Court requires to resolve such objections.

- 7. The Court will confer with the parties at the conclusion of trial to determine an appropriate schedule and all necessary page limits for post-trial briefing and other submissions.
- 8. The parties shall submit to the Court, no later than January 13, 2021 at 12 p.m., (i) two sets of binders containing hard copies of all trial exhibits organized in numerical order, separated into PTX, DTX, and JTX; and (ii) a single bookmarked PDF document containing all trial exhibits, via FTP. Credentials may be directly emailed to Chambers. The PDF containing the trial exhibits must include both a linked index and a bookmark for each exhibit, and the exhibits should be organized in numerical order, separated by PTX, DTX, or JTX. Each party shall submit to the Court via e-mail full color copies of any demonstrative exhibits that each intends to use at trial by 8 a.m. on the calendar day such demonstrative exhibit is expected to be used. At the end of trial, the parties shall submit to the Court two sets of hard copies of all demonstrative exhibits, organized in an easily identifiable manner.
- 9. Based on the Court's understanding of the number and scope of the parties' disputes which include allegations of infringement of at least 23 claims of at least eight patents against seven sets of Defendants as well as invalidity based on at least obviousness, anticipation, and lack of adequate written description and considering the parties' requests for time (Plaintiffs seek 63 hours for trial and Defendants request 70) (*see* PTO ¶ 95), the Court will allocate *between 22 and 25 hours per side*, with the final amount to be determined at the PTC. The Court recognizes this is a large case even among ANDA cases over which it has presided. Nevertheless, the requested amount of hours is significantly greater than the amounts the Court has permitted in recent years. In the Court's view, this case can be effectively litigated, with both sides having the opportunity to make full and fair presentations, in the hours being allocated by the Court.

### Case 1:22-cv-00981-JLH Document 397 Filed 07/29/25 Page 917 of 954 PageID #: 18507

10. Trial will be held at some or all of the following times, subject to the parties' time limits and the Court's other commitments:

Friday, January 15: 9 a.m. to 5:30 p.m.

Tuesday, January 19: 9 a.m. to 5:30 p.m.

Wednesday, January 20: 8:30 a.m. to 11:30 a.m. and 2 p.m. to 4 p.m.

Thursday, January 21: 9:00 a.m. to 5:30 p.m.

Friday, January 22: 8:30 a.m. to 1:30 p.m. and 4 p.m. to 6 p.m.

Monday, January 25: 12:30 p.m. to 5:30 p.m.

Tuesday, January 26: 9 a.m. to 5:30 p.m.

Wednesday, January 27: 8:30 a.m. to 4 p.m.

Thursday, January 28: 8:30 a.m. to 5:30 p.m.

Friday, January 29: 8:30 a.m. to 5:30 p.m.

HONORABLE LEONARD P. STARK UNITED STATES DISTRICT JUDGE

## EXHIBIT 6

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

	<del></del>
TRACKTHINGS LLC,	)
Plaintiff,	)
v.	) C.A. No. 1:22-cv-00981-JLH
NETGEAR, INC.	)
Defendant.	) ) )

## AFFIRMATIVE EXPERT REPORT STEPHEN A. HOLZEN

Stephen A. Holzen January 25, 2024

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Overall, this factor has a neutral impact on the negotiated royalty rates on the hypothetically negotiated royalty for both of the hypothetical negotiations.

## 2. Factor 2: The Rates Paid by The Licensee For The Use Of Other Patents Comparable To The Patents-In-Suit

112. I understand that for a license agreement to be probative to the hypothetical negotiation, it is necessary to consider the characteristics of past license agreements compared to the circumstances of the hypothetical negotiation. For example, these considerations include the relationship between the parties, the nature of the licensed technology, the products and/or services covered by the license, the exclusivity and royalty structure, the date of the agreement compared to the hypothetical negotiation date, and the impact of litigation on settlement agreements. I also understand that it is required to account for any of these differences between actual licenses and the license contemplated at the hypothetical negotiation when considering how actual licenses might inform the hypothetical negotiation. I consider these comparability criteria when analyzing the agreements below.

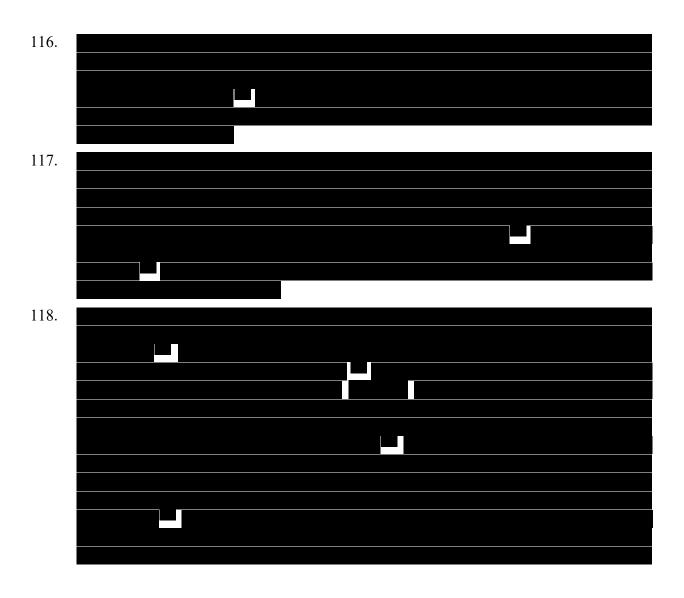


115. Importantly, at the hypothetical negotiations in this case, the cost of litigation would not be a consideration of the parties and would not factor into the agreed upon royalty rates. Therefore, agreements entered into outside the context of litigation tend to be more informative to a hypothetical negotiation than agreements entered into under the threat of litigation, as the parties at the hypothetical negotiations in this case would assume and agree that the Patents-in-Suit are enforceable, infringed, and not invalid.

<sup>&</sup>lt;sup>192</sup> Exhibit 16.0. *See also* Deposition of Anna Lam, January 5, 2024, pp. 36-37, 63, 68, 90, 114, 137-138, 149, 157, 163-164, 173, 179, 184, 188.

<sup>&</sup>lt;sup>193</sup> Deposition of Anna Lam, January 5, 2024, p. 32.

<sup>&</sup>lt;sup>194</sup> Deposition of Anna Lam, January 5, 2024, pp. 169-170.



<sup>&</sup>lt;sup>195</sup> Exhibit 16.0. See also Deposition of Anna Lam, January 5, 2024, pp. 86, 132, 146.

<sup>&</sup>lt;sup>196</sup> Exhibit 16.0. See also Deposition of Anna Lam, January 5, 2024, pp. 97-98, 104, 118-119, 149-152, 174-176. .

<sup>&</sup>lt;sup>197</sup> Exhibit 16.0. *See also* Deposition of Anna Lam, January 5, 2024, pp. 87-89, 134-135.

<sup>&</sup>lt;sup>198</sup> Interviews with Dr. Bims.

<sup>199</sup> Interviews with Dr. Bims; NETGEAR-TRACK-009762-781;

NETGEAR-TRACK-009833-846; NETGEAR-TRACK-009833-846; Deposition of Anna Lam, January 5, 2024,
 p. 143.

<sup>&</sup>lt;sup>202</sup> NETGEAR-TRACK-009762-781;



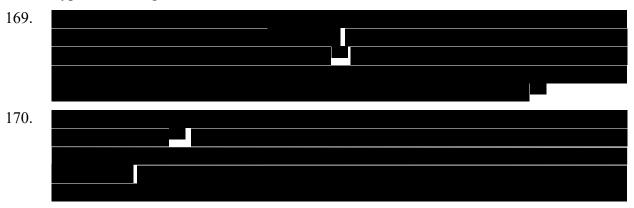
- 3. Factor 3: The Nature And Scope Of The License, As Exclusive Or Non-Exclusive; Or As Restricted Or Nonrestricted In Terms Of Territory Or With Respect To Whom The Manufactured Product May Be Sold
- 121. In isolation, patent licenses that have territorial restrictions may bear a relatively lower perunit royalty rate than patent licenses that do not. The present litigation relates only to United States patents. Therefore, the hypothetical license would be geographically restricted to the United States. Given this, the hypothetical license is not restricted in any material way relative to the scope of the licensed territory.
- 122. Moreover, in isolation, non-exclusive patent licenses typically bear a relatively lower royalty rate than exclusive licenses because the financial benefits associated with the licensed patent do not accrue exclusively to one party. I understand that TrackThings has asserted the Patents-in-Suit in this matter against certain Amazon.com, Inc. parties and

<sup>203</sup> 

<sup>&</sup>lt;sup>204</sup> Deposition of Anna Lam, January 5, 2024, pp. 52-53, 83-84, 103, 131, 144, 155-156.

<sup>&</sup>lt;sup>205</sup> Deposition of Anna Lam, January 5, 2024, p. 130.

- attach rates underscoring the confidence we have in our strategy for long-term profitable growth."<sup>278</sup>
- <u>July 27, 2022</u>: "Our Orbi 8 and 9 WiFi mesh systems, which are powered by patented tri-band and quad-band antenna designs, enable the very best WiFi speed, capacity and coverage and various residential footprints. All [their] superior performance is consistently validated by industry accolades and awards, including the latest in Tom's Guide. In an article highlighting the 2022 best devices [for] working from home, the Orbi 9 took top honors for best mesh system and was noted for outstanding performance as well as ease setup." 279
- 167. In the aggregate, this factor has an upward impact on the negotiated royalty rate.
  - 12. Factor 12: The Portion Of The Profit Or Of The Selling Price That May Be Customary In The Particular Business Or In Comparable Businesses To Allow For The Use Of The Invention Or Analogous Inventions
- 168. In general, this factor relates to the "market approach" which is a commonly accepted method for assessing the value of intangible assets. The market approach values assets based on comparable transactions between unrelated parties and "is the process by which value is derived by analyzing transactions involving similar intangible assets that were recently sold or licensed and then comparing these intangible assets to the actual intangible asset." When considering the market approach, an examination of the terms of transfer for similar technology is undertaken and inferences are drawn from those observations to identify terms that the patent holder and the defendant might have agreed to at the hypothetical negotiation.



<sup>&</sup>lt;sup>278</sup> TT-N-0082206-221 at 211.

<sup>&</sup>lt;sup>279</sup> TT-N-0082321-334 at 326.

<sup>&</sup>lt;sup>280</sup> Reilly, Robert F. and Schweihs, Robert P., Guide to Valuing Intangible Assets, 2014, p. 410.

<sup>&</sup>lt;sup>281</sup> Interview with Mr. Gabara; Deposition of Thaddeus Gabara, December 19, 2023, pp. 307-310.

<sup>&</sup>lt;sup>282</sup> Interview with Mr. Gabara; Deposition of Thaddeus Gabara, December 19, 2023, pp. 307-310.

<sup>&</sup>lt;sup>283</sup> Interview with Mr. Gabara; Deposition of Thaddeus Gabara, December 19, 2023, pp. 307-310.

<sup>&</sup>lt;sup>284</sup> See S.D.N.Y. 1:19-cv-09890; Deposition of Thaddeus Gabara, December 19, 2023, pp. 77-80.

<sup>&</sup>lt;sup>285</sup> Complaint for Patent Infringement and Jury Demand, S.D.N.Y. 1:19-cy-09890, October 25, 2019.



- 171. Overall, I am not aware of any patent license agreements or transaction that are sufficiently technically or economically comparable to the transaction contemplated at the hypothetical negotiations to offer a meaningful indication as to the value of the Patents-in-Suit. This factor therefore has a neutral effect on the negotiated royalty for the Patents-in-Suit at both of the hypothetical negotiations.
  - 13. Factor 13: The Portion Of The Realizable Profit That Should Be Credited To The Invention As Distinguished From Non-Patented Elements, The Manufacturing Process, Business Risks, Or Significant Features Or Improvements Added By The Infringer
- 172. As part of my analysis under *Georgia-Pacific* Factor 13, I perform an analysis to measure the incremental value associated with the use made of the Patents-in-Suit by the Defendant. The purpose of this analysis is to measure the portion of the value of the Accused Products that should be credited to the Patents-in-Suit, as distinguished from non-patented elements, the licensee's manufacturing process, the business risks, or any significant features or improvements added by the licensee.
- 173. At the time of the hypothetical negotiations, the parties would recognize that NETGEAR maintains a relationship with its own customers, operates its own facilities, manages its own employees, and conducts its own advertising. As such, NETGEAR would assume the business, operational, and financial risks associated with commercializing the Patents-in-Suit. Qualitatively, this indicates a lower royalty rate.
- 174. Quantitatively, I use an income-based analysis to perform my assessment under *Georgia-Pacific* factor 13. As described in *Valuing Intangible Assets*, an income approach values intangible assets based on expectations of economic income that may be generated by use or ownership of the subject property: "The income approach is based upon the economic principle of anticipation (sometimes also called the principle of expectation). In this

<sup>&</sup>lt;sup>286</sup> Interview with Mr. Gabara; Deposition of Thaddeus Gabara, December 19, 2023, pp. 77-80.

<sup>&</sup>lt;sup>287</sup> Interview with Mr. Gabara.

<sup>&</sup>lt;sup>288</sup> Interview with Mr. Gabara.

<sup>&</sup>lt;sup>289</sup> Thaddeus Gabara v. Facebook, Inc., Judgement, July 8, 2021, (Fed. Circ. 2021).

<sup>&</sup>lt;sup>290</sup> Interview with Mr. Gabara. *See also* TT-N-0006666-670 at 666.

<sup>&</sup>lt;sup>291</sup> Deposition of Thaddeus Gabara, December 19, 2023, pp. 315-319.

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

**NETGEAR, INC.,** 

Defendant.

Case No. 22-981-JLH (Consolidated)

JURY TRIAL DEMANDED

TRACKTHINGS LLC'S OPPOSITION TO DEFENDANT'S MOTION IN LIMINE NO. 2

Plaintiff TrackThings LLC ("TrackThings") respectfully opposes Defendant NETGEAR Inc.'s ("NETGEAR") second motion *in limine* ("MIL").

I. TrackThings' Opposition to Defendant's MIL NO. 2: To Exclude Evidence, Testimony, or Argument Regarding Licensing of Mr. Gabara's Unasserted Patents.<sup>1</sup>

Mr. Gabara, the sole inventor on the Asserted Patent, and TrackThings' principal, is an expert in wireless communications systems with decades of experience at AT&T Bell Labs (later Agere) with over 100 issued patents. As confirmed by documents produced during fact discovery, patents for which Mr. Gabara is an inventor have been See, e.g., Ex. A, "FY 2004: Thad Gabara's Performance Review," at, e.g., TT-N-0024020, Exhibit A was produced in June 2023, about two years before trial, and six months before Mr. Gabara's December 19, 2023 deposition. See Ex. B, "Gabara Dep. Tr." NETGEAR's allegation that "TrackThings only put NETGEAR on notice of any such licensing of Mr. Gabara's patents during dispositive motions" (Br. at 1) is simply incorrect. And similarly, NETGEAR's cited authority (Ferring v. Finch) is therefore inapposite as the at-issue documents were produced two months before trial, not two years. Br. at 2; see Br. Ex. 4 (Finch decision, excluding documents produced on June 5, 2024, with jury selection set to occur on August 2, 2024.) TrackThings should be free to elicit testimony from Mr. Gabara about documents, such as Ex. A, which were produced nearly two years ago during fact discovery and show the prior licensing success of patents Mr. Gabara invented.

<sup>&</sup>lt;sup>1</sup> "Br. \_" refers to NETGEAR's opening motion *in limine* two.

NETGEAR's MIL also fails to acknowledge that the damages experts for both parties cite to and rely on evidence regarding Mr. Gabara's other patents as well. For example, Mr. Holzen, TrackThings' damages expert, notes that

Ex. C, "Holzen Expert Report," at ¶ 45. For his part, Mr. Kidder, NETGEAR's damages expert, references TrackThings' history of selling or licensing patents. Ex. D, "Kidder Expert Report," at ¶ 16 (""") NETGEAR did not move to strike the section of Mr. Holzen's expert report related to the successful licensing history of Mr. Gabara's other patents, nor did NETGEAR raise an issue with this section of Mr. Holzen's report in its *Daubert* motion and NETGEAR should not be allowed to *de facto* strike Mr. Holzen's otherwise unchallenged report now. *See* Ex. E, *Astellas Pharma Inc. v Sandoz Inc.*, No.20-1589-JFB-CJB, D.I. 501(D. Del. Jan. 27, 2023) (denying a motion *in limine*, finding it "is in fact a Daubert motion.")

Finally, NETGEAR also alleges that any reference to Mr. Gabara's past successes would unduly prejudice the jury. (Br. at 2.) But it is widely accepted that, as part of a trial presentation, the parties are allowed to provide some general, positive testimony about themselves without prejudicing the opposing party. TrackThings should be free to briefly establish that Mr. Gabara has had a successful career, including as an inventor at Agere and now at TrackThings. *See, e.g., Multimedia Patent Trust v. Apple Inc.*, 2012 WL 12868264, at \*2 (S.D. Cal., 2012) (denying a motion *in limine* to preclude Apple from mentioning or presenting evidence regarding Steve Jobs or presenting articles or publicity praising the Apple or its products in general.)

Indeed, NETGEAR's approach to this litigation to date has included repeated attempts to attack Mr. Gabara's reputation, credentials and credibility, including by referencing his other,

unasserted patents. As just one example, in NETGEAR's motion for summary judgment under Section 101, NETGEAR made reference to the fact that other patents from Mr. Gabara have been found to be unpatentable. See D.I. 244 at 1, n.2 ("The three asserted patents in this case cover yet more unpatentable paper inventions by Thaddeus Gabara ... Other of Mr. Gabara's patents have been found to be unpatentable. See Gabara v. Facebook, Inc., 484 F. Supp. 3d 118 (S.D.N.Y. 2020), aff'd, 852 F. App'x 541 (Fed. Cir. 2021).")<sup>2</sup> To be clear, TrackThings does not condone NETGEAR's litigation tactics. But at a minimum, NETGEAR cannot have both ways—referencing certain Gabara patents that it wants to without TrackThings having the opportunity to note that, more generally, the market place has

In sum, NETGEAR's second motion *in limine* should be denied because TrackThings timely produced evidence related to Mr. Gabara's general success as an inventor and TrackThings should be free to elicit testimony from Mr. Gabara at trial general, positive background about himself and TrackThings including pass licensing revenue related to patents on which he is an inventor, especially in light of NETGEAR's apparent intent to attack his reputation, career, and credibility. And similarly, TrackThings' experts should be free to testify about the otherwise unchallenged facts and theories disclosed in their expert reports.

-

<sup>&</sup>lt;sup>2</sup> TrackThings does not yet have NETGEAR's proposed deposition designations, exhibit lists, or other disclosures, and is therefore does not know the full extent to which NETGEAR intends to continue to levy similar attacks at trial.

Dated: New York, New York June 13, 2025 Respectfully submitted,

#### MCCARTER & ENGLISH, LLP

#### /s/ Alexandra Joyce

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Alexandra M. Joyce (No. 6423)
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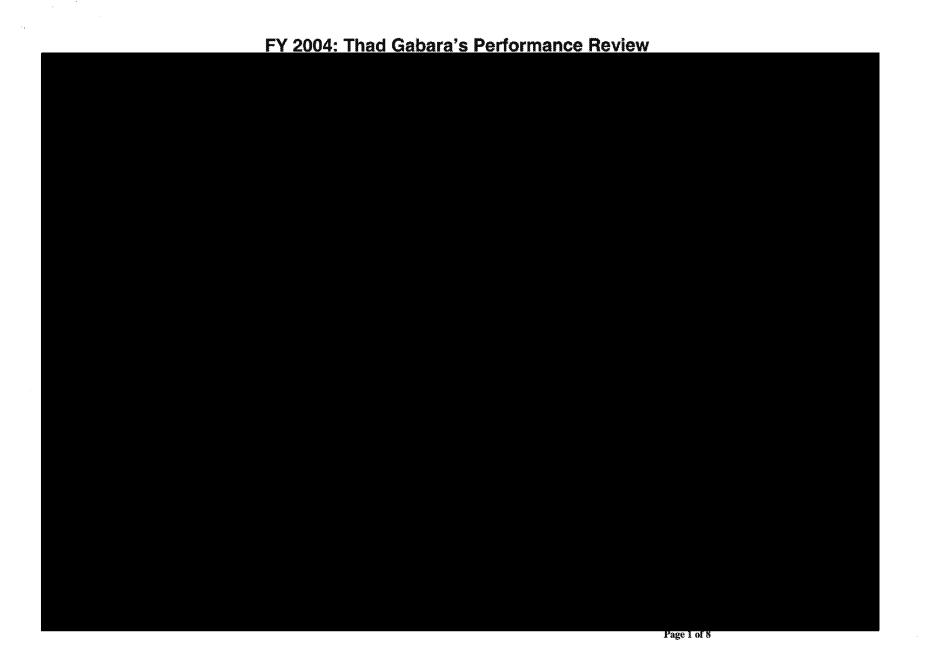
Timothy K. Gilman Christopher M. Gerson Robert Pickens Amanda Sewanan Priyadarshini Das

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Attorneys for Plaintiff TrackThings LLC

## Exhibit A













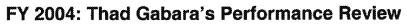


FY 2004: Thad Gabara's Performance Review











# Exhibit B

	Page 1
1	IN THE UNITED STATES DISTRICT COURT
	FOR THE DISTRICT OF DELAWARE YORK
2	X
	TRACKTHINGS LLC,
3	
	Plaintiff,
4	
	-vs- C.A. No.: 22-98-RGA-JLH
5	(Consolidated)
	NETGEAR, INC.,
6	
	DEFENDANT.
7	X
8	
9	DECEMBER 19, 2023
10	10:30 A.M.
11	
12	
13	
14	VIDEO DEPOSITION of THADDEUS GABARA,
15	individually and on behalf of TRACKTHINGS LLC ,
16	taken by the Defendant pursuant to Notice and
17	to the Federal Rules of Civil Procedure, held
18	at the offices of Schulte Roth & Zabel LLP,
19	919 Third Avenue, New York, New York, before
20	Marianne Witkowski-Smith, a Shorthand Reporter
21	and Notary Public of the State of New York.
22	
23	
24	

	Page 2		Page 4
1	APPEARANCES:	1	VIDEO TECHNICIAN: Good morning.
2	COLUMN TE DOTH ( ZADEL LI D	2	We're going on the record at approximately
3	SCHULTE ROTH & ZABEL LLP Attorneys for the Plaintiff	3	10:13 a.m. on December 19, 2023.
	919 Third Avenue	4	Please note that the microphones are
4	New York, New York 10022	5	sensitive and may pick up whispering and
_	BY: TIMOTHY GILMAN, ESQ.	6	private conversations. Please mute your
5 6	tim.gilman@srz.com	7	phones at this time.
	COOLEY LLP	8	Audio and video recording will
7	Attorneys for the Defendant	9	continue to take place unless all parties
8	1299 Pennsylvania Avenue, NW, Suite 700 Washington, DC 20004	10	agree to go off the record.
Ü	BY: NAINA SONI, ESQ.	11	This is Media 1 of the
9	nsoni@cooley.com	12	video-recorded deposition of Thaddeus
10 11	ALSO PRESENT:	13	Gabara, taken by Counsel for the Defendant
11	TOM DEVINE, Legal Videographer	14	in the matter of TrackThings LLC v NETGEAR
12	, , ,	15	Inc., in the U.S. District Court for the
13	* * * *	16	District of Delaware, Civil Action No.
14 15	~ ~ ~ ~	17	22-91-RGA-JH excuse me JLH,
16		18	consolidated.
17		19	My name is Tom Devine and I'm the
18 19		20	videographer. The court reporter is
20		21	Marianne Smith, and we are both from
21		22	Veritext.
22 23		23	This deposition is being held at 919
24		24	Third Avenue, New York, New York.
	Page 3		Page 5
1	FEDERAL STIPULATIONS	1	I am not authorized to administer an
2		2	oath, I am not related to any party in
3	IT IS HEREBY STIPULATED AND AGREED	3	this action, nor am I financially
4	by and between the counsel for the respective	4	interested in the outcome. If there are
5	parties herein that the sealing, filing and	5	any objections to proceeding, please state
6	certification of the within deposition be	6	them at the time of your appearance.
7	waived; that the original of the deposition	7	I'd ask counsel present to now
8	may be signed and sworn to by the witness	8	please state their appearances and
9	before anyone authorized to administer an oath,	9	affiliations for the record, beginning
10	with the same effect as if signed before a	10	with the Noticing attorney.
11	Judge of the Court; that an unsigned copy of	11	Afterwards, the court reporter
12	the deposition may be used with the same force	12	will swear in the witness and we may
13	and effect as if signed by the witness, 30 days	13	proceed.
14	after service of the original & 1 copy of same	14	MS. SONI: Naina Soni from Cooley
15	upon counsel for the witness.	15	LLP on behalf of Defendant NETGEAR, INC.
16		16	MR. GILMAN: Timthy Gilman, Schulte
17	IT IS FURTHER STIPULATED AND AGREED	17	Roth & Zabel on behalf of Plaintiff
18	that all objections except as to form, are	18	TrackThings.
19	reserved to the time of trial.	19	VIDEO TECHNICIAN: Mary, would you
1)		20	please swear in the witness.
20		_	
	* * * *	21	THADDEUS GABARA,
20	* * *		THADDEUS GABARA, the witness herein, was thereupon duly sworn
20 21	* * *	21	

	Page 342		Page 344		
1	CERTIFICATE	1	1 Trackthings LLC v. Netgear Inc.		
2			Thaddeus Gabara (#6361178)		
3	STATE OF NEW YORK )	3	ERRATA SHEET		
4	)ss.:	4	PAGELINECHANGE		
5	COUNTY OF NEW YORK )	5			
6		6	REASON		
7	I, MARIANNE WITKOWSKI-SMITH, a Notary	7	PAGELINECHANGE		
8	Public within and for the State of New York,	8			
9	do hereby certify:	9	REASON		
10	That THADDEUS GABARA, the witness	10	PAGELINECHANGE		
11	whose deposition is hereinbefore set forth,	11			
12	was duly sworn by me and that such deposition	12	REASON		
13	is a true record of the testimony given by	13	PAGELINECHANGE		
14	the witness.	14			
15	I FURTHER CERTIFY that I am not	15	REASON		
16	related to any of the parties to this action	16	PAGELINECHANGE		
17	by blood or marriage, and that I am in no	17			
18	way interested in the outcome of this	18	REASON		
19	matter.	19	PAGELINECHANGE		
20	IN WITNESS WHEREOF, I have hereunto	20			
21	set my hand this 21st day of December, 2023.	21	REASON		
22		22			
	11re% > Marianns Witkowski-Smith	23			
23			Thaddeus Gabara Date		
24	MARIANNE WITKOWSKI-SMITH	25			
	Page 343		Page 345		
1	Timothy Gilman, Esquire		Trackthings LLC v. Netgear Inc.		
2	tim.gilman@srz.com		Thaddeus Gabara (#6361178)		
3	December 22, 2023	3	ACKNOWLEDGEMENT OF DEPONENT		
4	RE: Trackthings LLC v. Netgear Inc.				
5	10/10/2022 TI 11 G 1 (#6261179)	4	I, Thaddeus Gabara, do hereby declare that I		
	12/19/2023, Thaddeus Gabara (#6361178)	5	have read the foregoing transcript, I have made any		
6	The above-referenced transcript is available for	5	have read the foregoing transcript, I have made any corrections, additions, or changes I deemed necessary as		
7	The above-referenced transcript is available for review.	5 6 7	have read the foregoing transcript, I have made any corrections, additions, or changes I deemed necessary as noted above to be appended hereto, and that the same is		
7	The above-referenced transcript is available for review.  Within the applicable timeframe, the witness should	5 6 7 8	have read the foregoing transcript, I have made any corrections, additions, or changes I deemed necessary as noted above to be appended hereto, and that the same is a true, correct and complete transcript of the testimony		
7 8 9	The above-referenced transcript is available for review.  Within the applicable timeframe, the witness should read the testimony to verify its accuracy. If there are	5 6 7 8 9	have read the foregoing transcript, I have made any corrections, additions, or changes I deemed necessary as noted above to be appended hereto, and that the same is		
7 8 9 10	The above-referenced transcript is available for review.  Within the applicable timeframe, the witness should read the testimony to verify its accuracy. If there are any changes, the witness should note those with the	5 6 7 8 9	have read the foregoing transcript, I have made any corrections, additions, or changes I deemed necessary as noted above to be appended hereto, and that the same is a true, correct and complete transcript of the testimony given by me.		
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7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	The above-referenced transcript is available for review.  Within the applicable timeframe, the witness should read the testimony to verify its accuracy. If there are any changes, the witness should note those with the reason, on the attached Errata Sheet.  The witness should sign the Acknowledgment of Deponent and Errata and return to the deposing attorney. Copies should be sent to all counsel, and to Veritext at cs-midatlantic@veritext.com.  Return completed errata within 30 days from receipt of testimony.  If the witness fails to do so within the time allotted, the transcript may be used as if signed.  Yours,	5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	have read the foregoing transcript, I have made any corrections, additions, or changes I deemed necessary as noted above to be appended hereto, and that the same is a true, correct and complete transcript of the testimony given by me.  Thaddeus Gabara Date *If notary is required  SUBSCRIBED AND SWORN TO BEFORE ME THIS		

# **Exhibit C**

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,	)
Plaintiff,	)
V.	) C.A. No. 1:22-cv-00981-JLH
NETGEAR, INC.	)
Defendant.	)

## AFFIRMATIVE EXPERT REPORT STEPHEN A. HOLZEN

Stephen A. Holzen January 25, 2024

- rights to certain of his patents related to tracking things. <sup>60</sup> I understand that TrackThings holds rights to many of Mr. Gabara's patents. <sup>61</sup>
- 44. Based upon my discussions with Mr. Gabara, I understand that he is the sole inventor of the Patents-in-Suit and holds a Bachelor of Science and a Masters in Electrical Engineering. He began his career at Bell Labs in 1979, which later became AT&T Bell Labs, Lucent, and most recently Agere Systems. When he started at Bell Labs, Mr. Gabara was a member of the technical staff in the Development section of AT&T Bell Labs creating custom integrated circuits for wireless systems and switching systems. Thereafter, Mr. Gabara joined the Research Division at Bell Labs and liaised between the research and development wings of Bell Labs. He has since retired from Agere Systems, and has previously prosecuted patents before the United States Patent and Trademark Office ("USPTO") as a patent agent.
- 45. I am further informed that Mr. Gabara is the author of over 40 patent publications and he is named as an inventor in more than 120 patents.<sup>66</sup>
- 46.

### 2. NETGEAR

47. NETGEAR, Inc. was by founded by Patrick Lo and Mark G. Merrill in Delaware in January of 1996.<sup>69</sup> The company became public on July 31, 2003, and is currently headquartered in San Jose, California.<sup>70</sup> NETGEAR's goal is to create "innovative and advanced connected solutions ranging from easy-to-use premium WiFi solutions, performance gaming routers to enhance console and online-game play, security and support services to protect and enhance home networks, to switching and wireless solutions to augment business networks and audio and video over Ethernet for Pro AV applications."<sup>71</sup>

<sup>&</sup>lt;sup>60</sup> Deposition of Thaddeus Gabara, December 19, 2023, pp. 51-54.

<sup>&</sup>lt;sup>61</sup> Deposition of Thaddeus Gabara, December 19, 2023, p. 52.

<sup>62</sup> Interview with Mr. Gabara; TT-N-0022002-004.

<sup>&</sup>lt;sup>63</sup> Interview with Mr. Gabara; TT-N-0022002-004.

<sup>&</sup>lt;sup>64</sup> Interview with Mr. Gabara; TT-N-0022002-004.

<sup>65</sup> Interview with Mr. Gabara; TT-N-0022002-004.

<sup>&</sup>lt;sup>66</sup> Interview with Mr. Gabara; TT-N-0022002-004.

<sup>&</sup>lt;sup>67</sup> Interview with Mr. Gabara.

<sup>&</sup>lt;sup>68</sup> Plaintiff TrackThings' First Supplemental Responses and Objections to Defendant NETGEAR, Inc.'s Interrogatory Nos. 5, 14, 22 and Second Supplemental Responses and Objections to Interrogatory Nos. 15, 24, December 22, 2023, pp. 204, 215; Deposition of Thaddeus Gabara, December 19, 2023, pp. 88-89, 320.

<sup>&</sup>lt;sup>69</sup> https://www.netgear.com/about/management/; NETGEAR, Inc., Form 10-K, for the year ended December 31, 2021, p. 71.

<sup>70</sup> https://investor.netgear.com/resources/faqs/default.aspx#.

<sup>&</sup>lt;sup>71</sup> TT-N-0009478-595 at 551.

# **Exhibit D**

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS, LLC.,		§	
	Plaintiff,	§ §	
NETGEAR, INC.,		§	
		§	C.A. No. 1:22-cv-00981-JLH
	Defendant	§	
		§	
		<b>§</b>	
		§	
		§	

### EXPERT REPORT OF DOUGLAS KIDDER REGARDING DAMAGES

e.g., its website formerly located at www.trackthings.tech. To the extent necessary, TrackThings has complied with all requirement of 35 U.S.C. § 287 at all relevant times for each of the Patents-in-Suit.<sup>2</sup>

12.

13. As of August of 2018, TrackThings described itself on its website as:

Welcome to TrackThings LLC! We sell patents for smartphones, mobile systems, wireless networks, and intelligent queries.

. . .

We have a number of patents for sale. Please contact us for further information of the attached five lots. See claim chart for claim 8 of the '131 patent in Lot 5 that reads on "Paper" from Facebook, additional charts charts [sic] available on request.

We provide intellectual property (IP) to patent holding firms and companies. Contact us for prices of our patent lots.<sup>4</sup>

- 14. As of August 2018, TrackThings was explicitly listing the '442 and '017 Patents for sale. <sup>5</sup>
- 15. As of March of 2022 (the next snapshot available on the Internet Archive), TrackThings stated that its "lots are temporarily not being offered for sale or license." However, in its list of lots that had been offered for sale or licensing, TrackThings listed the '893 Patent as part of Lot 6. <sup>7</sup>

16.

<sup>&</sup>lt;sup>2</sup> Complaint,  $\P 15 - 16$ .

<sup>&</sup>lt;sup>3</sup> Deposition of Thaddeus Gabara, December 19, 2023 at 59:17 – 22.

<sup>&</sup>lt;sup>4</sup> TrackThings Homepage (September 2018), web.archive.org, accessed on 2024-03-13 at https://web.archive.org/web/20180903191159/https://www.trackthings.tech/.

<sup>&</sup>lt;sup>5</sup> TrackThings Homepage (September 2018), web.archive.org, accessed on 2024-03-13 at https://web.archive.org/web/20180903191159/https://www.trackthings.tech/.

<sup>&</sup>lt;sup>6</sup> TrackThings Homepage (March 2022), web.archive.org, accessed on 2024-03-14 at https://web.archive.org/web/20220311225530/https://www.trackthings.tech/.

<sup>&</sup>lt;sup>7</sup> TrackThings Homepage (March 2022), web.archive.org, accessed on 2024-03-14 at https://web.archive.org/web/20220311225530/https://www.trackthings.tech/.

<sup>&</sup>lt;sup>8</sup> Deposition of Thaddeus Gabara, December 19, 2023 at 308:14 – 310:10.

# Exhibit E

Astellas Pharma Inc. et al. Sandoz Inc. et al. 1297 1:20 Filed 15% 2972 5 Page 950 of 954 PageID #: Summary Docket Entries 18540

Showing 927 docket entries in Astellas Pharma Inc. et al v. Sandoz Inc. et al.

Zimmerman, A. Cheek for Lupin Defendants. (Court Reporter Deanna Warner) (dlb) (Entered: 01/26/2023)

#501: Filed: 2023-01-27

#### Order

ORAL ORDER: The Court, having reviewed the parties' briefing on Defendants' Motion in Limine No. 1 (the "First MIL"), (D.I. 495, ex. 8 at ECF pgs. 3-7, 129-33, 154-56), and Motion in Limine No. 2 (the "Second MIL"), (id. at ECF pgs. 164-68, 778-82, 800-02) (collectively, the "Motions"), hereby DENIES the Motions for the following reasons: (1) With respect to the First MIL, via which Defendants seek to preclude the testimony of Plaintiffs' expert Dr. Steven Weisman, the Scheduling Order in this case provided that "[n]o Daubert motions or motions to strike expert testimony shall be filed unless discussed with the [C]ourt at [the status conference regarding expert discovery] and the [C]ourt deems a motion practice appropriate." (D.I. 88 at para. (8)(g)(iii)) The First MIL is in fact a Daubert motion, dressed up to look like a motion in limine. (D.I. 495, ex. 8 at ECF pg. 132) The Court so concludes because: (1) the motion seeks to exclude the entirety of an experts testimony on the grounds that he is not "qualified" to provide it and that it does not fit (i.e., it is not sufficiently "tied" to) the issues in this case; (2) it repeatedly references Federal Rule of Evidence 702, Daubert and the standards set out therein; and (3) it cites to caselaw that implements Daubert. (Id. at ECF pgs. 4-6) Pursuant to the SO, Defendants should have raised this issue at the December 22, 2022 status conference and first sought permission to bring this argument (which, in turn, would have allowed the Court to determine whether the motion warranted briefing and, if so, provide for a more fulsome briefing process). Since they did not do so, the Court concludes that they have waived the right to raise the First MIL.; (2) Similarly, with respect to the Second MIL, which seeks to preclude Plaintiffs from using certain modeling at trial done by their expert Dr. Ronald Thisted, (id. at ECF pgs. 164-68), this is really a stealth motion to strike. The Second MIL clearly seeks relief premised on Federal Rule of Civil Procedure 37(c)(1)on the grounds that certain information was untimely disclosedand it relies on cases implementing that Rule. (Id.) Again, pursuant to the Scheduling Order, Defendants should have raised the issues underlying the Second MIL during the December 22, 2022 status conference. Their failure to do so is rendered even more impactful by the reality that the Second MIL also implicates the Pennypack factors, a few of which focus on the extent to which a late disclosure would "disrupt the orderly and efficient trial of the case" and the "ability of the party to cure the prejudice[.]" Meyers v. Pennypack Woods Home Ownership Assn, 559 F.2d 894, 904-05 (3d Cir. 1977). By waiting to raise this issue until the eleventh hour as a motion in limine, Defendants have essentially run out the clock on these Pennypack factors, which the Court cannot countenance. Had the issue been raised at the status conference, the Pennypack analysis (were it required) may have looked quite different. Ordered by Judge Christopher J. Burke on 1/27/2023. (dlb) (Entered: 01/27/2023)

## IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

TRACKTHINGS LLC,

Plaintiff,

v.

NETGEAR, INC.,

Defendant.

C.A. No. 22-981-JLH (CONSOLIDATED)

**JURY TRIAL DEMANDED** 

DEFENDANT NETGEAR, INC.'S REPLY IN SUPPORT OF ITS MOTION IN LIMINE NO. 2 TO EXCLUDE EVIDENCE, TESTIMONY, OR ARGUMENT REGARDING LICENSING OF MR. GABARA'S UNASSERTED PATENTS

This Court should not permit irrelevant and highly prejudicial notes or testimony regarding supposed licensing of Mr. Gabara's unasserted patents. First, no discovery was produced for these licenses. TrackThings does not deny that it neither produced nor identified any specific licenses. TrackThings points only to Mr. Gabara's 2004 Performance Review, which does not identify any license terms, nor full patent numbers. (Oppo., 1.) The review appears to show Agere's revenue for Agere's unproduced agreements, for which Mr. Gabara "[m]ade claim charts." (*Id.*, Ex. A at TT-N-0024020.) No expert in this case identified any licenses of Mr. Gabara's patents. Mr. Holzen's report provided *background* that

(D.I. 248, Ex. 21, ¶ 45 (emphasis added).) But the report subsequently *never* identifies any such licenses and instead appears to indicate that none exist.¹ (*Id.*, ¶¶ 110, 125-127, 171.) Mr. Kidder also does not identify any licenses involving Mr. Gabara's patents; his reference to TrackThings' revenue relates to a patent *sale*. (*Id.*, Ex. 24, ¶ 76.) Allowing new evidence at trial about Agere's purported licenses would be highly prejudicial. (*See* Open., 2.) <u>Second</u>, the supposed licenses are not relevant. Mr. Gabara can describe his career without presenting unsubstantiated testimony about another company's supposed licenses that were never produced or identified. Provided Mr. Gabara does not mention his other patents, NETGEAR agrees it will not present evidence of the unpatentability of Mr. Gabara's unasserted patents at trial. <u>Third</u>, any mention of such licenses would mislead the jury, and if TrackThings introduces the purported value of the supposed licenses, there is considerable risk that the jury would inappropriately consider this in any damages determination. For these reasons and those described in NETGEAR's opening brief, this Court should grant NETGEAR's motion.

\_

<sup>&</sup>lt;sup>1</sup> Astellas does not apply: the MIL there was a *Daubert* in disguise because it repeatedly referenced the *Daubert* standard and sought to exclude the entirety of the expert's testimony on the grounds that he was not qualified. (*See* Oppo., Ex. E.) Those facts are not present here.

Dated: June 20, 2025 Respectfully submitted,

/s/ James L. Higgins

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### **CERTIFICATE OF SERVICE**

The undersigned counsel hereby certifies that true and correct copies of the foregoing document were caused to be served on July 18, 2025 on the following counsel in the manner indicated:

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